FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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EDITORIAL COMMENT.

The Work of the Advisory Committee.

Once again the Report of the Advisory Committee for Aeronautics is to hand, this time for the year 1914–15. Owing to existing conditions it has not been thought advisable—for obvious reasons—to issue so full a description of the work carried out as in previous years, and as the detailed report for the year 1913–14 has not yet been published, it is to be presumed that both will now be held over until the end of the war. Although being only in the nature of a White Paper the present brief *résumé* clearly indicates the importance of the researches carried out, and the bearing these will have on the future development of aircraft in all its forms of design and construction.

One of the most live items mentioned in the White Paper, inasmuch as it adds fundamentally to not only the accuracy but also to the volume of the work that can be undertaken, is the addition to the equipment of the National Physical Laboratory of a new air channel 7 ft. square in section, which has been completed and is now in use. With a consumption of about 60 h.p., an air speed of 65 ft. per sec. can be reached. The work done in the air channels has included tests of airship models, aeroplane wings, bodies, fins and rudders, tail planes and elevators, struts, wires, and other aeroplane parts, and on models of complete aeroplanes. With reference to the latter, the investigation relating to the stability of the aeroplane has been extended and continued. While the previous work related to the effect of disturbances from steady rectilinear motion, the case of a machine effecting a turn, whether in a horizontal plane or in a spiral, has now been considered, and interesting results have been obtained in regard to the influence of turning, on the longitudinal stability, and also investigation of the tendency to the particular form of instability commonly called "spinning." Apart from the question of stability, the strength of construction has formed the subject of experiments, and methods have been devised for the calculation of the stresses in the wings and bracing of aeroplanes. It has been found that the methods of calculation that apply to more rigid structures cannot be applied to such a flexible and elastic structure as that of an aeroplane, without appreciable modifications. For this purpose the method of "strain energy" has been developed and applied. The results of this work should, when published, be of the greatest value to designers.

The advantage of good construction has been clearly indicated by reports from the Expeditionary Force, and in all machines now designed the recommendations made by the Committee are closely followed. The factor of safety allowed for exceeds that specified as required in connection with the effect of suddenly flattening out after a steep dive. These modifications have, of course, necessitated an increase in weight, but this increase has been compensated to some extent by improvements in other directions and by increased aerodynamical efficiency. Other considerations, mainly of a military nature, play an important part in limiting the amount of increase in strength that it would be advisable to provide, since other factors, especially rapid climb, tend to safety of a different kind.

Tests on air-screws have been made both in the air channel and on the whirling arm, and some highly interesting points have been brought out. Experiments are proposed with a view to improvements in the method of calculation for air-screws, and to securing means of predicting more accurately the performance of an air-screw under various conditions.

As has been the case in previous years, the full scale work at the Royal Aircraft Factory has proved of the highest value, whilst the investigations undertaken have necessarily been closely related to military requirements.

The value of the theoretical study of the conditions affecting stability and the experiments on models in the wind channels associated therewith, has been demonstrated in its application to full-size machines, and much has been done in extending the knowledge derived from the work on models, and in determining the manner in which information obtained can be most fully utilised in the design of the numerous aeroplane types now employed.

By the request of the War Office investigations have been undertaken with regard to autogenous welding, and in accordance with suggestions put forward by the Committee the use of autogenous welding has been dispensed with in parts under stress. Among other matters that have been under consideration may be mentioned the question of sighting appliances for use on aeroplanes, and accuracy in bomb-dropping. With regard to seaplanes the work of testing models of floats has been continued in the William Froude National Tank.

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Mr. H. G. Wells' Manifesto.

Since making our comments last week upon the very patriotic manifesto issued by Mr. H. G. Wells in the *Daily Express*, the subject has been steadily pursued day by day by our contemporary. It can hardly be said that much new ground has been broken beyond the immediate stirring effect produced by the first announcement of this suggestion for ending the war. Theoretically the proposition is ideal, and if the war is to continue, as some seem to hold, for a year or two longer, there is no reason why such a very revolutionary scheme should not be consummated, in spite of any countering efforts that may be forthcoming from the German side. In fact even the *possible* prospect of a long war may be said to fully justify the extension in every direction as quickly as possible of the widest organisation for the purpose of bringing to fruition any well-considered plan for creating a vast fleet of high-powered aeroplanes. The counsel of perfection contained in Mr. Wells' demand for 10,000 planes with their necessary reserves and personnel, is one, of course, to be ardently desired, although if it be possible to arrive at something considerably short of this ideal, we do not think there will be any great ground for being dissatisfied with the effective result. As a fact, it is already evident that modification in the *Daily Express's* expert views in this direction has already set in rather drastically, as the opinion has been ventured that perhaps it might be as well to make a start with a couple of thousand machines. This at least is getting down to earth somewhat, and brings the proposition a little more into line with the not unexpected reiterated answer of the Under Secretary of War to the effect that the Government could not see that any good purpose would be served by giving orders on so large a scale for the production of aeroplanes at present as 3,000. We hardly think, in saying this, anyone can accuse us of not desiring to see every feasible means employed of expanding the already greatly expanded ranks of those who have embarked upon the construction of aircraft. From our point of view nothing would be more to our liking, if it were deemed possible or advisable, than to see every workshop in the Kingdom engaged on the production of warplanes. But there is a wide difference between hysterical dreams and commonplace matter-of-fact earthly realisation, whilst hysteria is not calculated to help either our cause or the industry. Just now there are so many things that matter and so much to be done in a hurry, in order to stay for a time the enemy hordes which are so persistently hammering away at the fronts with what appears to be unlimited supplies of the most destructive ammunition. It is easy enough to have everybo· ·switch off from their particular job, and one and all apply themselves to carry through every suggestion made for bringing to an earlier close the calamitous struggle at present in force, provided our enemies will in the meantime consent to hold up their attacks. But when such a very virile foe is confronting our hard-pressed soldiers at the front, it becomes somewhat risky to throw aside such methods for counter-attack as we have found effective, for some mythical ideal which, on the face of it, carries so many practical difficulties of reasonably early accomplishment as to rule it out of court as an immediate solution to the tangle of problems which week by week have to be unravelled. By all means let it be striven for that, as far as is possible with existing circumstances, the construction of warplanes with their engines, and the instruction and bringing to efficiency of pilots, shall be extended and persisted in. Merely the giving off of breezy opinions carries little connection with it beyond the immediate circle of admiration of each individual called upon to express his views. By way of example of this airy—in more senses than one—method of creating a 10,000 warplane fleet, the following samples may be quoted :—"There ought to be no difficulty about supplying the aeroplanes required"; "America alone could build a huge fleet for us"; "There are plenty of men ready to become pilots"; "The material and workmanship required can be mustered without the slightest difficulty"; "Aeroplanes can be constructed at least three times as fast as a motor car"; "There need be no difficulty in supplying engines"; "Under the instruction of garage owners working to specification, we have thousands of joiners and carpenters who could speedily finish the job"; "The training of pilots is not a very serious matter, since the average time taken to qualify for a certificate is but a matter of a few weeks"; and so on and so forth. Most of these sort of plausible views are no doubt simply the outcome of a general feeling of being in favour of such a fascinating scheme for clearing the heavy clouds of war from this troubled globe of ours. When sober figures, however, are gone into, a very different picture at once rises into strong relief; and another well-intentioned combination for bringing light to the world and bold advertisement to its authors has to be relegated to the place where so many "things that might have been" have to be interned.

We fancy we can detect in this direction signs for this particular agitation in the following paragraph in the *Daily Express* of Wednesday :—

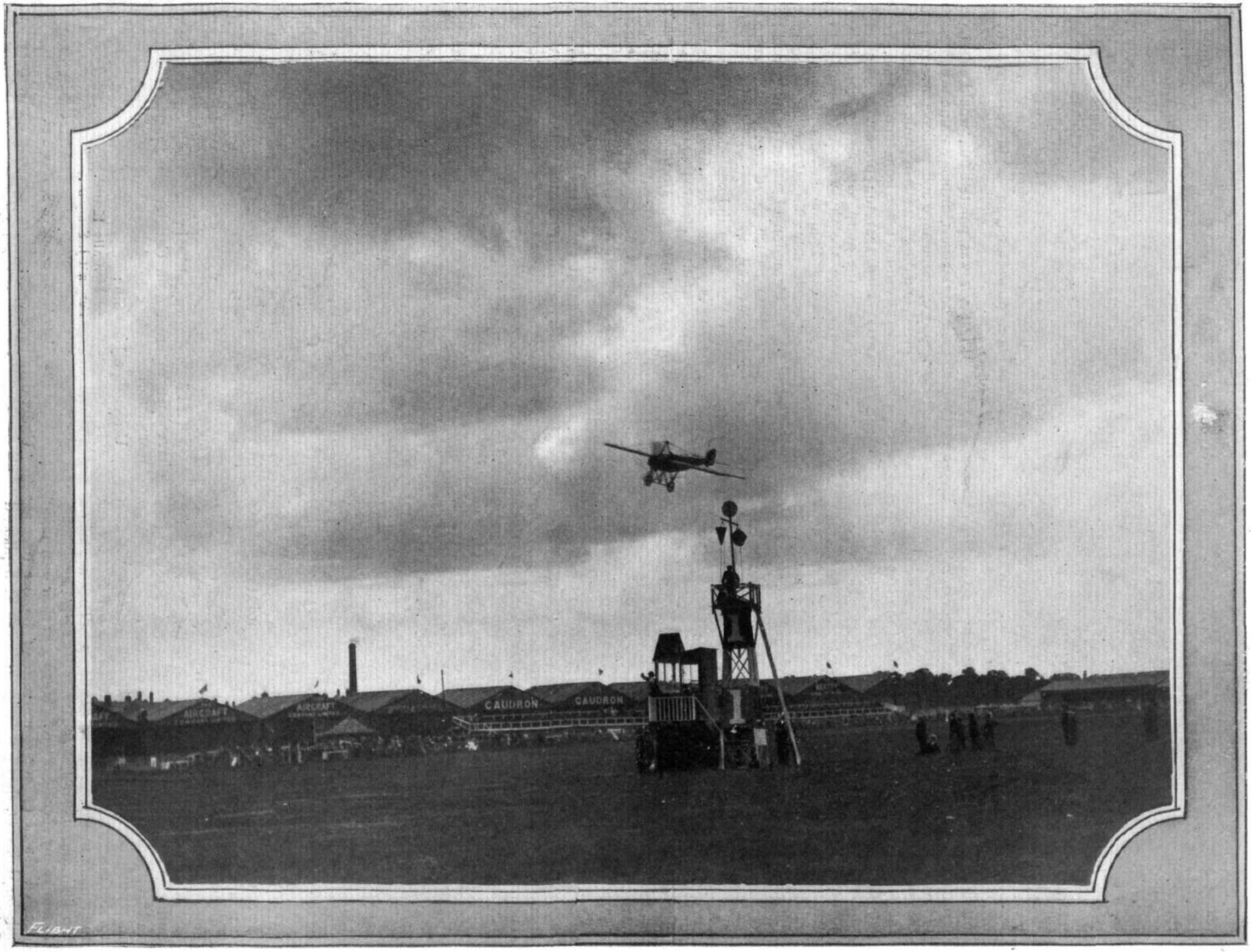
"The scheme has gripped the imagination of the public, but the official mind apparently lacks the imagination necessary to realise its possibilities."

"Six months hence, when the question will probably have become really urgent, the Government will wake up to the fact that a great aeroplane fleet is just the thing we need.

"The matter is again to be raised in Parliament."

Again, it is unwarranted for the *Daily Express* expert to suggest that into the answer of the Under Secretary for War can be read that he is "under the impression that a powerful aerial offensive would serve no purpose." Such a palpable misreading of what Mr. Tennant did say can only tend to weaken the appeal which our contemporary puts forward for speeding on the output of aircraft.

Perhaps under the new national registration scheme a way out of this and other mazes may be forthcoming. It will be so easy for those who are desirous of serving their country to put down their names in the official forms as



A Morane-Saulnier rounding Pylon I at Hendon, as flown by Mr. W. L. Brock at Hendon Aerodrome during last season.

willing to take in hand the particular job of such and such minister or official which each critic may deem himself especially ordained to fill. It would be curious to realise how many square men there are about who have but the one idea in life that they are exactly suited to fill round holes and *vice versâ*.

One definite fact at least has emerged from the enquiries in Parliament by Mr. Lynch, M.P., which is of both considerable interest and moment, as it has been rather inferred, and, we believe, actually stated, that the office of Minister of Munitions was to include "Aircraft." Mr. Tennant, the Under Secretary for War, in rising to answer the interrogations of Mr. Lynch, put his querist in somewhat of a quandary when Mr. Lynch insisted upon having his answer from Mr. Lloyd-George as the Minister of Munitions. Said Mr. Tennant: "The Minister of Munitions asked me to answer the questions because the matter of aeroplanes is not within his province. Perhaps in these circumstances the hon. gentleman will allow me to give the answer?" But the hon. gentleman would do nothing of the sort—he preferred to take his chance, as the Speaker pointed out he would have to, of not getting an answer. Nevertheless, an answer *is* forthcoming, by reason of the questions of Mr. Lynch and the written replies of Mr. Tennant being published by the *Daily Express*, and which are given in full elsewhere in FLIGHT this week. Whatever we may all wish, there is nothing unexpected in those replies.

* * *

Air-raidism. Without wishing to minimise the effect upon individual victims of any possible airship raids which may materialise in the future, there is little doubt that in many directions there is an unnecessary tendency to create a feeling of alarm which has in various ways curious sequels. For instance, quite a lot of feeling was brought to light last week at the local police court of one of the suburbs of London, when several residents were fined for extinguishing street lamps. Hitherto most of the trouble over the lighting regulations has arisen from the objection to shutting down the illumination. The reverse was the case on Saturday, as the defendants pleaded, by way of excuse for their modern Tom and Jerry escapades, that the street lamps lighted up their houses too much. One had had his house newly painted, and the light helped to single out his abode as an especially fine mark for Zeppeliners. So he and his neighbours held council, and decided that the the light should be extinguished. To No. 1 defendant fell the lot of carrying out the sentence, and the magistrate assessed the crime at 7*s*. 6*d*. Another defendant, who failed to see why the only light in his street should be the brilliant one outside his house, parted with 5*s*., and a similar sum settled the cases of two others who protested in this manner against the undue brilliancy. In the result little harm has been done, but it is to be hoped that a good moral effect will have been produced, as without doubt such illicit attempts to further reduce the illumination of our streets can only be harmful, as it carries with it far more danger than if the lights are left burning. This was the view of the local council, who had had notices printed pointing out the danger involved in putting out these lamps. It is altogether too absurd to think that the Zeppelin visitors are out looking for their mark in any particular gas lamp. They are much too high and in far too great a hurry to get away again to aim at any specific target. Having in their own mind decided that they are somewhere or another over an inhabited district, they just let go in the most haphazard fashion, irrespective whether they are hitting a church or a chicken-house. So long as their bombs get to earth they are content to leave the tale of the result of their exploits to the Woolf Press Bureau. For this reason we are heartily in sympathy with the police who took up the matter. The action is merely a reflection of the views held by the Commissioner of Police and the Admiralty.

At a meeting of another suburban council the previous week, a letter from the Commissioner was read in which, in reference to an alleged wish by the Council for the total extinction of street lighting when an attack of hostile aircraft was impending, he remarked that this matter had been carefully considered by the Admiralty, and their decision was that the extinguishing of all lights would be fraught with most serious consequences, and possibly bring about more casualties than would be caused by enemy aircraft.

The Fire Brigade, it was pointed out, would not be able to reach their destinations, ordinary traffic would be dangerously impeded, ambulance and police movements would be hampered, and the elements of panic introduced. From overhead observations made from time to time, the Admiralty were satisfied that the present system of reduced lighting was the more satisfactory condition, since an observer from the sky was quite unable to determine the quarter of London he was passing over. It could thus be confidently affirmed that according to expert opinion, the extinction of street lighting would rather aggravate than reduce the degree of danger to which the public are exposed.

There are also other abuses and possible abuses in this connection. There is the possible and obvious misuse of the fire alarms, whilst an actual abuse was drawn attention to in the Commons on Monday last, when Sir E. Cornwall referred to advertisements recently appearing in the London Press describing the enemy aircraft raids in language of an exaggerated and alarmist nature. He wished to know whether there was any censorship over such advertisements, and what steps it was proposed to take to safeguard the public from such statements.

Sir J. Simon deprecated such greatly exaggerated and alarmist statements, whether by advertisement or otherwise. Moreover, he said, the attention of newspapers had been invited to the matter, and he had no doubt the Press would exercise care in admitting advertisements on this subject to their columns in the future.

It is to be hoped that from now therefore there will be a little less harrowing of the feelings of the timid public by a few astute persons out to rope in profits over insurance, fire-extinguishers, and what not. We have every sympathy with legitimate trading, but just now ordinary methods must give way to expediency. Not even the investment of the profits in the new War Stock can justify many of the suggestive and hair-raising announcements emanating from some of those seeking to adapt their business-acquiring methods to the passing phases resulting from the War.

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The Roll of Honour.

THE following casualties in the Expeditionary Force have been reported from General Headquarters to the War Office:—

Under date June 6th:

Accidentally Killed.
Sergeant J. Sampson.

Died.
1st Class Air-Mechanic G. S. Bannister.

Under date June 17th:

Wounded.
Lieutenant E. F. Norris, Royal Flying Corps.

FLIGHT

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

IN the despatch dated June 23rd from an "Eye-witness" with the British General Headquarters there was the following :—

"As already reported, the power station at La Bassée was attacked by us from the air (on Friday, June 18th). The extent of the damage caused is not known, but bombs were thrown on to the building from a moderately low elevation, and flames were observed to issue from it. . . . .

"There were two engagements in the air on this day (Sunday, June 20th). Near Roulers one of our machines on reconnaissance duty encountered a hostile aeroplane, and after a machine-gun duel forced it to descend hurriedly to earth. A combat with machine-guns at a height well over a mile above the earth's surface, though now not uncommon, may be considered to provide some excitement; but on the same day two other officers of the Royal Flying Corps had a still more exciting experience. While reconnoitring over Poelcappelle at a height of about 4,000 ft. they engaged a large German biplane having a double *fuselage*, two engines, and a pair of propellers. The German machine at first circled round ours, shooting at it with a machine-gun, but so far as is known not inflicting any damage. Then our observer fired about fifty rounds in return at under two hundred yards range. This had some effect, for the hostile biplane was seen to waver. After some more shots its engines stopped, and it nose-dived to a level of 2,000 ft., where it flattened out its course, flying slowly and erratically. Under a heavy fire from anti-aircraft guns down below our pilot turned towards our lines to complete his reconnaissance, when his machine was hit and he decided to make for home. But the petrol tank had been pierced, and as the aeroplane glided downwards on the slant, the petrol was set alight by the exhaust and ran blazing down to the front of the body of the aeroplane, which travelled on to the accompaniment of the rattle of musketry as the unexpended rounds of machine-gun ammunition exploded in the heat and those in the pilot's loaded revolver went off.

"The pilot, however, did not lose control, and the aeroplane proceeded steadily on its downward course. Before it reached the ground a large part of the framework had been destroyed, and even the hard wood blades of the propeller were so much burnt that the propeller ceased to revolve in the rush of air. When the machine finally landed behind our lines both the officers were severely burnt, and the pilot, on climbing hurriedly out of the blazing wreck, tripped over a wire stay, fell, and sprained his knee. The few still serviceable portions of the aeroplane were then salved and collected under the shrapnel fire of the German guns. As an example of a terse, unvarnished statement of fact, the last words of the pilot's official report of this adventure are worthy of quotation: '. . . The whole of the *nacelle* (body) seemed to be in flames. We landed at W. 35 n P. 16 (Z Series 93 E.W. 1/35,500).'"

In the *communique* issued in Paris on the afternoon of the 25th ult. :—

"A German aeroplane yesterday dropped five bombs on the sanatorium of Zuydcote without doing any damage."

In the afternoon *communique* issued on Sunday it was stated :—

"Our aeroplanes on June 25th threw some twenty bombs, ten of which were 155 mm. shells, on Douai station and the next station on the line. Douai station seems to have been seriously damaged."

In the evening *communique* there was the following :—

"A German aeroplane dropped two bombs on St. Dié. A woman was killed."

In the *communique* issued in Paris on Monday at midnight it was stated :—

"Yesterday morning one of our aeroplanes succeeded in dropping, with success, eight bombs on Zeppelin sheds at Friedrichshaven. Owing to the stoppage of the motor the aviator was obliged to descend, but he eventually reached Swiss territory at Rheinfelden."

In the afternoon *communique* issued in Paris on Tuesday there was the following :—

"In the Argonne there is incessant fighting at Bagatelle, in which air topedoes and grenades play a prominent part."

In an official summary of the fighting in the Gallipoli Peninsula issued in Paris on the 24th :—

"Our aviators stud the sky above the Turkish front to carry out their observations, which they do with complete success. Soon the guns of the enemy are reduced to silence. . . . ."

In a *communique* from the General Staff issued in Rome on the 22nd ult., there was the following :—

"Hostile aeroplanes have dropped bombs without doing any damage."

In the *communique* from the Main Headquarters issued in Rome on Monday it was stated :—

"In the theatre of operations bad weather continues. Certain activity is being shown by the enemy's aeroplanes, which have bombarded several positions recently conquered by us, but for the most part with little success."

THE BRITISH AIR SERVICES.

Royal Naval Air Service.

THE following appeared among the Admiralty announcements of the 22nd ult. :—

Squadron-Commander E. T. R. Chambers to "President," additional, for R.N.A.S. June 11th.

P. V. Fraser entered as Warrant Officer (Second Grade), for temporary service, with seniority of June 21st, and appointed to "President," additional, for R.N.A.S.

The following appeared among the Admiralty announcements of the 24th ult. :—

Temporary Sub-Lieut. (R.N.V.R.) C. A. Maitland-Heriot entered as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of June 22nd.

R. F. E. Wickham and L. A. T. Pritchard both entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of June 26th.

The following appeared among the Admiralty announcements of the 25th ult. :—

Temporary commissions have been granted as follows :—

Lieutenants (R.N.V.R.): J. R. H. Prioleau, with seniority of June 17th; R. D. Carey, with seniority of June 18th; R. F. Maitland, with seniority of June 23rd; and P. Blair, with seniority of June 24th, and all appointed to "President," additional, for R.N.A.S.

Sub-Lieutenants (R.N.V.R.): G. E. Baxter, with seniority of June 16th; R. A. Laws and W. H. Wood, both with seniority of June 18th; all appointed to the "President," additional, for R.N.A.S.; and G. Whale, with seniority of June 20th, and appointed to "President," additional.

The following entries have been made: N. E. Stirling, W. P. D. C. Scott, and H. D. Hyde as Probationary Flight Sub-Lieutenants, with seniority of June 18th. W. N. Formby and J. S. Mathias as Warrant Officers (2nd Grade), for temporary service, with seniority of June 24th, and all appointed to "President," additional, for R.N.A.S.

Capt. (Territorial Force Reserve) T. A. M. Ashton granted temporary commission as Lieutenant, with seniority of June 8th, and appointed to "President," additional.

Temporary Sub-Lieuts. F. Dunn promoted to temporary Lieutenant, with seniority of June 23rd, and appointed to "President," additional; and W. L. Marsh promoted to temporary Lieutenant (R.N.V.R.), with seniority of June 20th.

The following appeared among the Admiralty announcements of the 26th ult. :—

The following Probationary Flight Sub-Lieutenants have been confirmed in rank, with original seniority, and reappointed to "President," additional, for R.N.A.S., and transferred to Permanent List, R.N.A.S., all to date June 23rd: R. B. Pullin, L. H. Hardstaff, G. W. Hilliard, D. W. A. Barton, H. R. Hopperton, H. S. Kerby (temporary), W. H. Greer (temporary), and G. H. Reid (temporary).

Temporary Lieut. P. W. Stout granted temporary commission as Lieutenant (R.N.V.R.), with seniority of June 21st, and appointed to "President," additional, for duty with R.N.A.S.

Temporary Second Lieut. (R.M.) W. B. Jones to "President," additional, for R.N.A.S. June 25th.

Temporary Lieut. (R.N.V.R.) N. H. Nutt, A. D. Borton, and C. Lister all promoted to temporary Lieutenant-Commander (R.N.V.R.), with seniority of June 24th.

Temporary Sub-Lieuts. (R.N.V.R.) C. H. Parkes, P. M. Woodland, F. H. Hayward, H. G. Atkinson, and R. G. Blakesley all promoted to Temporary Lieutenants (R.N.V.R.), with seniority of June 24th, and reappointed.

Second Lieut. H. V. Reid entered as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of June 24th, and appointed to "President," additional, for R.N.A.S.

Temporary Sub-Lieut. G. H. Bettinson entered as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of June 27th, and appointed to "President," additional, for R.N.A.S.

Chief Petty Officers (R.N.V.R.) A. M. Gabriel, F. W. Mansell, S. Nixon, and D. McK. Garlick all promoted to Temporary Sub-Lieutenants (R.N.V.R.), with seniority of June 24th, and reappointed to "President," additional, for R.N.A.S.

The following have been entered as Probationary Flight Sub-Lieutenants, for temporary service, with seniority of June 25th, and appointed to "President," additional, for R.N.A.S.: P. W. James, J. E. Minifie, R. S. Dallas, and A. M. Blake.

The following appeared among the Admiralty announcements of the 29th ult. :—

The following promotions have been made:

Flight Lieutenants: T. A. Rainey, C. Draper, H. A. Busk, E. T. Newton-Clare, A. Corbett-Wilson, H. R. Busteed, H. C. Fuller (acting Flight-Commander), A. Nickerson (acting Flight-Commander), W. H. Wilson, H. E. M. Watkins, and F. H. Haskins, all to the rank of Flight-Commander, with seniority of June 25th; D. C. S. Evill and J. P. Wilson, D.S.C., both granted the acting rank of Flight-Commander, with seniority of June 25th.

Flight Sub-Lieutenants: G. W. Price, T. K. Young, E. F. Bray, and E. J. Hodsoll, to the rank of Flight-Lieutenants, with seniority

A quintette of Royal Flying Corps recipients of the Distinguished Conduct Medal, particulars of which were published in the June 4th issue of FLIGHT.—1. 2nd Class Air-Mechanic H. Dewhurst, Longridge, near Preston. 2. Corpl. S. C. Griggs, of Margate, since promoted sergeant. 3. 2nd Class Air-Mechanic H. D. Beet, Ladywood, Birmingham. 4. 2nd Class Air-Mechanic J. H. Dollittle, London. 5. 2nd Class Air-Mechanic J. E. Prance, Bideford.

of June 25th, and all reappointed; A. S. Maskell, K. F. Watson, P. E. H. Wakeley, G. E. Livock, C. W. Dickinson, C. H. C. Smith, R. H. Field, W. S. Newton-Clare, G. F. Breese, F. G. Andreae, J. C. Brooke, C. L. Startup, C. B. Dalison, P. N. Barnes, J. S. Mills, D.S.C., P. Legh, W. H. Elliott and W. L. Welsh (both temporary), all to the rank of Flight-Lieutenant, with seniority of June 25th.

Flight Sub-Lieutenants (Acting Flight-Lieutenants): B. S. Benning, E. J. Cooper, W. K. F. G. Warneford, and S. E. Ritchie, all to the rank of Flight-Lieutenant, with seniority of June 25th.

Flight-Lieutenants (temporary): S. V. Sippe, D.S.O., J. W. K. Allsop, C. H. Butler, T. D. Mackie, and C. Hornby (both acting Flight-Commanders), all to the rank of temporary Flight-Commander, with seniority of June 25th; G. M. Dyott and F. Thurston, both granted the acting rank of Flight-Commander, with seniority of June 25th.

Royal Flying Corps (Military Wing).

THE following appeared in the *London Gazette* of the 22nd ult. :—

Assistant Equipment Officer.—Lieut. T. W. P. L. Chaloner, 4th Batt. Alexandra, Princess of Wales's Own (Yorkshire Regt.), Territorial Force. June 5th, 1915.

Supplementary to Regular Corps.—Second Lieutenant (on probation) Robert E. A. W. Hughes-Chamberlain is confirmed in his rank.

The following appeared in a supplement to the *London Gazette* issued on the 23rd ult. :—

Supplementary to Regular Corps.—Walter V. Falkiner to be Second Lieutenant (on probation). June 14th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 24th ult. :—

Flying Officers.—June 10th, 1915: Temporary Second Lieut. J. C. Quinnell, R.A.; Second Lieut. H. E. van Goethem, Special Reserve; Second Lieut. R. E. A. W. Hughes-Chamberlain, Special Reserve.

Supplementary to Regular Corps.—Second Lieut. (on probation) Henry E. van Goethem is confirmed in his rank. George B. Bulman to be Second Lieutenant. June 14th, 1915.

To be Second Lieutenants (on probation): Reginald F. B. Baynes; June 5th, 1915. Edward A. B. Rice; June 8th, 1915. Colin Defries; June 15th, 1915.

The following appeared in the *London Gazette* of the 25th ult. :—

Flying Officers to be Flight Commanders.—June 11th, 1915: Capt. Maurice W. Noel, King's (Liverpool Regt.); Lieut. Gilbert W. Mapplebeck, D.S.O., King's (Liverpool Regt.), and to be temporary Captain whilst so employed; Lieut. Arthur S. Barratt, R.A., and to be temporary Captain whilst so employed; Lieut. Victor A. Barrington-Kennett, Special Reserve, and to be temporary Captain whilst so employed; Lieut. (temporary Capt.) John B. T. Leighton, Scots Guards, and to retain his temporary rank; Lieut. William C. Adamson, Special Reserve, and to be temporary Captain whilst so employed; Lieut. John L. Kinnear, King's (Liverpool Regt.), and to be temporary Capt. whilst so employed; Second Lieut. Cyril C. Wigram, Special Reserve, and to be temporary Captain whilst so employed; Capt. David W. Powell, Northamptonshire Regt.

Flying Officers.—Second Lieut. the Hon. O. M. Guest, Lothians and Border Horse Yeomanry, T.F.; May 28th, 1915. Temporary Second Lieut. B. P. Greenwood; June 3rd, 1915. June 11th, 1915: Major F. W. Richey, R.A., and to be seconded; Capt. R. A. Cooper, Hampshire (Carabiniers) Yeomanry, T.F.; Second Lieut. T. Garne, 4th Batt. Connaught Rangers, and to be seconded; Second Lieut. F. L. Mond, 6th London Brigade, R.F.A., T.F.; Second Lieut. W. J. C. Kennedy-Cochran-Patrick, Rifle Brigade (Prince Consort's Own), and to be seconded.

Supplementary to Regular Corps.—Hubert Le Jeune to be Second Lieut. (on probation). Dec. 29th, 1914.

The following appeared in a supplement to the *London Gazette* issued on the 26th ult. :—

Flying Officers.—June 7th, 1915: Lieut. Maurice J. Ambler, 14th (King's) Hussars, and to be seconded; Second Lieut. Leonard W. Learmount, Special Reserve.

The following appeared in a supplement to the *London Gazette* issued on the 28th ult. :—

Supplementary to Regular Corps.—Second Lieut. (on probation) Leonard W. Learmount is confirmed in his rank.

To be Second Lieutenants (on probation): William T. L. Allcock; June 12th, 1915. Ernest W. J. Payne: June 21st, 1915.

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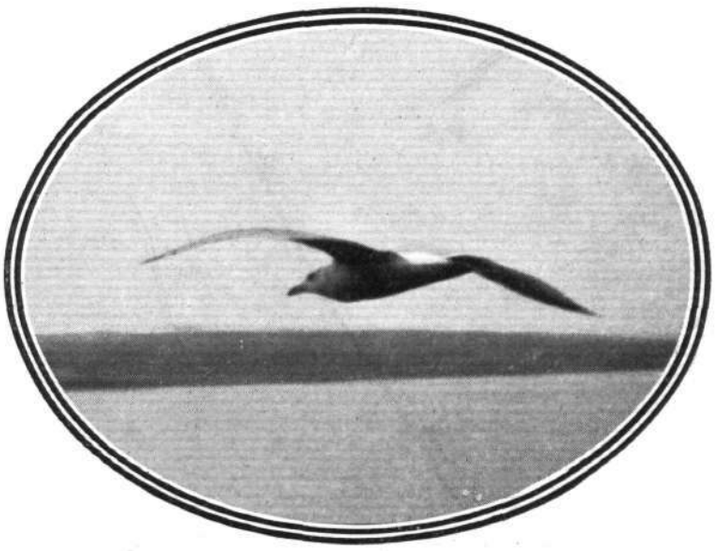
SOARING—A STUDY FROM NATURE.

PHOTOGRAPHS of gulls and other birds innumerable have been taken in every conceivable position, and many have been published in the pages of FLIGHT. The snap which appears on this page has a particular interest, which is explained in the following communication received from Mr. H. Langdon-Davies, who has always taken a keen interest in the science of flying.

In sending this photograph, which was secured from the ferry boat which runs from Vancouver to West Vancouver, Mr. Langdon-Davies says that the gulls glide alongside the boat for long distances, practically motionless. He continues :—



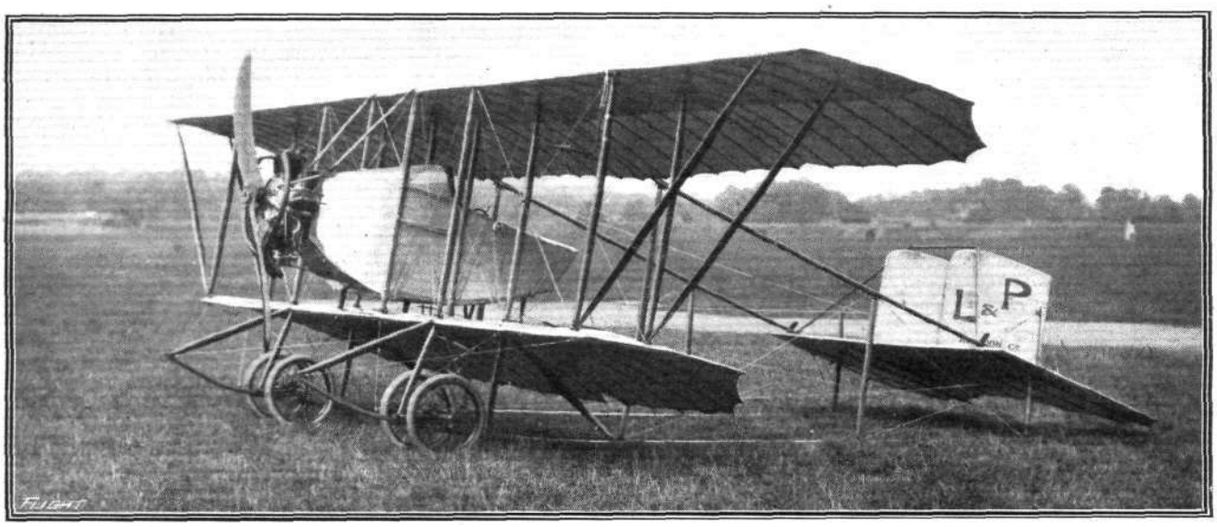
"When I took the photograph I was not making any attempt to obtain an artistic picture. What I wanted to obtain was more a working drawing of a bird in a perfectly rigid position with respect to its component parts, a position that it steadily maintained for a considerable length of time while gliding. A natural picture, in fact, of a bird under exactly similar conditions to a rigidly built flying machine, either when gliding, or when being forced through the air by means of its propeller or tractor, as the case may be.

"I took some dozens of photographs, although this was the only one that approximated what I wanted. While doing so, I noticed one or two facts that may be of interest, viz., that these birds, when gliding for any length of time, have their legs packed away as seen in the photograph. In other photographs where the legs are plainly visible away from the body, the picture probably only represents a very short interval between wing flaps, and the bird has not assumed its final rigid gliding attitude.

"The only movements I noticed during long glides were, movements of the head, for the purpose of looking about, and I fancy these were made without altering the centre of gravity; for instance, if the bird looked to the left, the bird would crook its neck to the right, and turn the head and beak about a vertical pivot. The other movement consisted in twisting the tail very slightly, depressing one corner and raising the other, and I fancy occasionally raising and lowering the tail as a whole to alter its natural gliding angle, doubtless in accordance with the varying air stream in which it was moving. I was never able to detect a bird altering its natural gliding angle by pushing forward its head, and thereby altering its centre of gravity."

THE NEW L. AND P. *BREVET* BIPLANE.

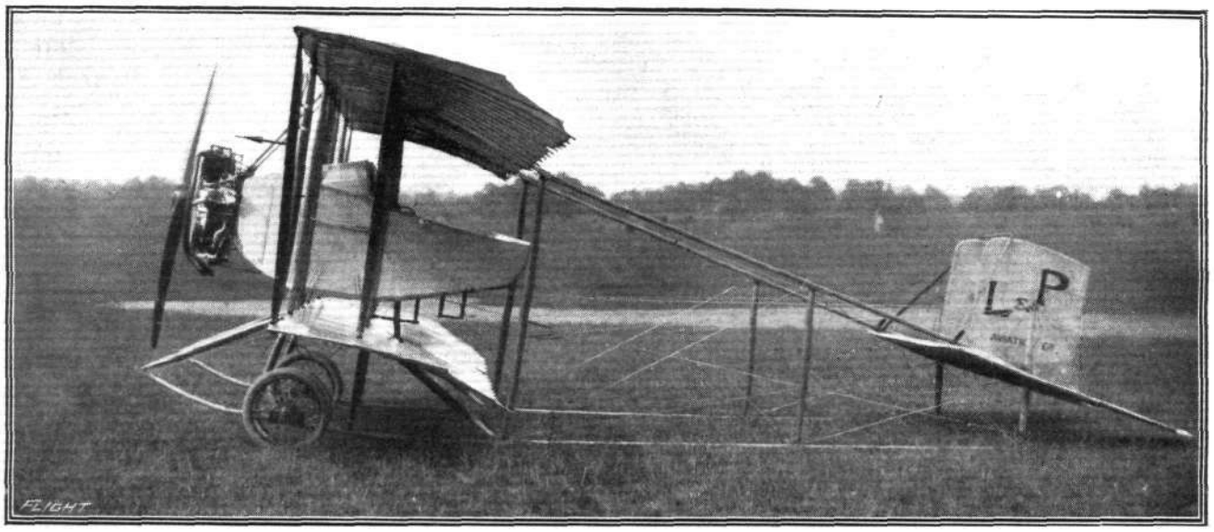
WHEN the London and Provincial Aviation Co. made their début as aeroplane constructors with a little tractor biplane, 35 h.p. Anzani engine, it was at once apparent that no trouble or expense had been spared in rendering the construction as strong and reliable as first-class material and good workmanship could make it. Subsequent machines have all had the same characteristics, with the result that the firm is now enjoying, and justly so, a reputation for excellence of workmanship and finish. The first 35 h.p. school biplane was soon followed by several others of a similar type, and for each a large stock of spare parts was completed so as to facilitate replacements in case of the breakages that are inevitable where machines are handled daily by a number of inexperienced pupils. There can be little doubt that by working on these lines the output of the school has been greatly increased, such accidents as have occurred having entailed only short delays.



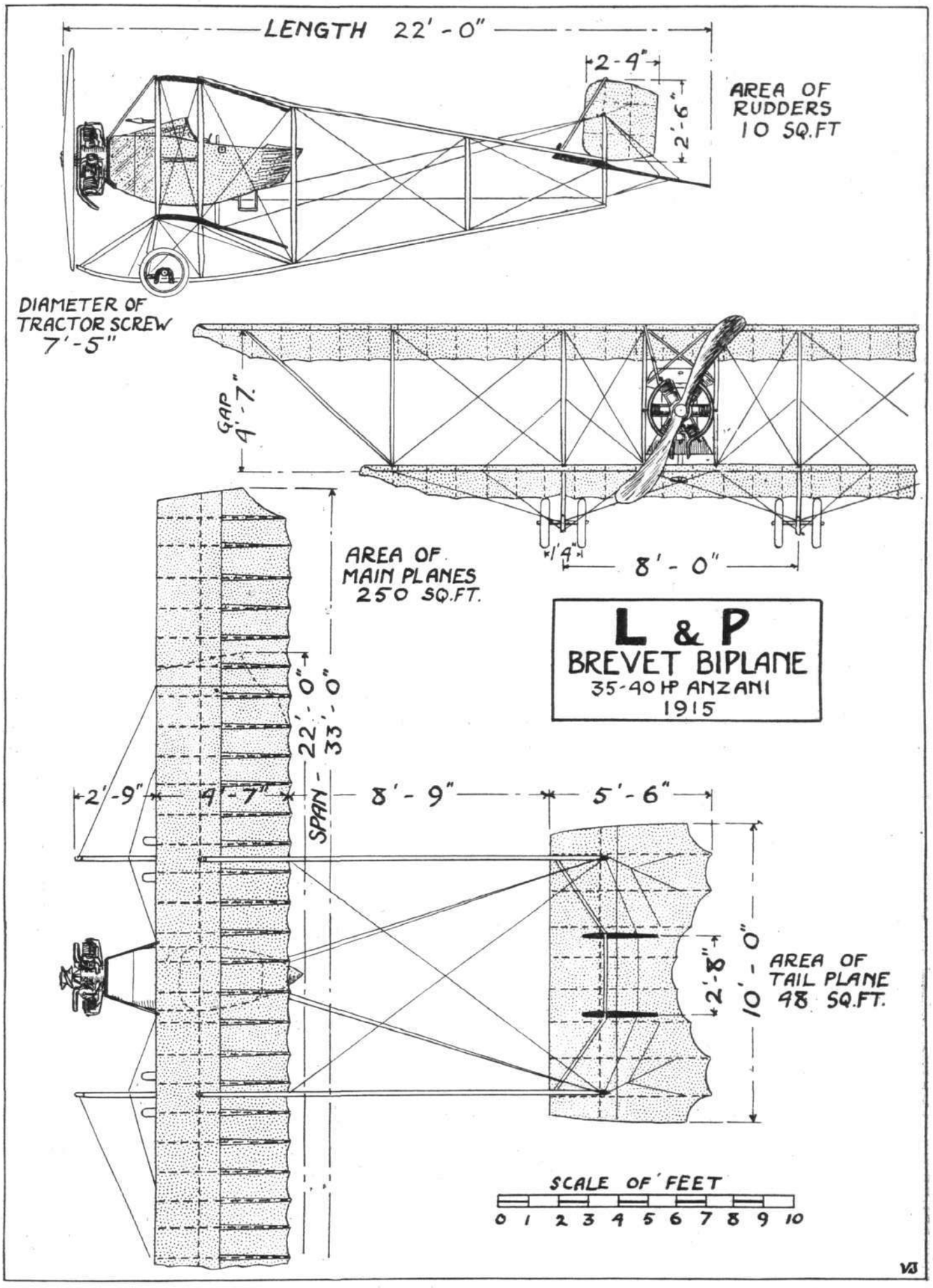
Three-quarter front view of the L. and P. biplane. "Flight" Copyright.

Although the little 35 h.p. biplanes flew exceptionally well it was soon found that slightly higher powered machines would be a decided advantage for the more advanced pupils, and it was not long before a 45 h.p. machine of similar type, but differing as regards dimensions, made its appearance. So well did this two-seater pass its preliminary trials that it was promptly purchased by Mr. W. G. Moore, and is now greatly used for passenger-carrying and solo flights.

No sooner had this machine left the stocks than a new biplane was put in hand, this time a single seater fitted with a 35–40 h.p. Anzani engine. Intended for use as a *brevet* machine, it was finished and tested just recently, and found to be well up to the usual L. and P. standard as regards ease of handling and climbing power. In affording the pupils an opportunity of getting acquainted with the control of a faster and higher powered machine, the new *brevet* biplane, which is illustrated in the accompanying sketches, scale drawings, and photographs, forms a stepping stone to the service machines that those of the pupils who upon completion of their tuition join the R.F.C. or the R.N.A.S. will have to fly. In order that

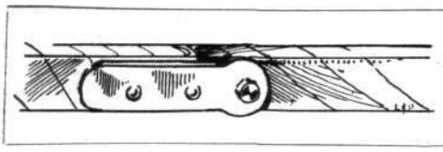


Side view of the L. and P. *brevet* biplane. "Flight" Copyright.



THE L. AND P. *BREVET* BIPLANE.—Plan, side and front elevation to scale.

they may familiarise themselves with the use of all the necessary instruments, the dash of the L. and P. *brevet* machine has been uncommonly well equipped with these



A spar hinge on the L. and P. biplane.

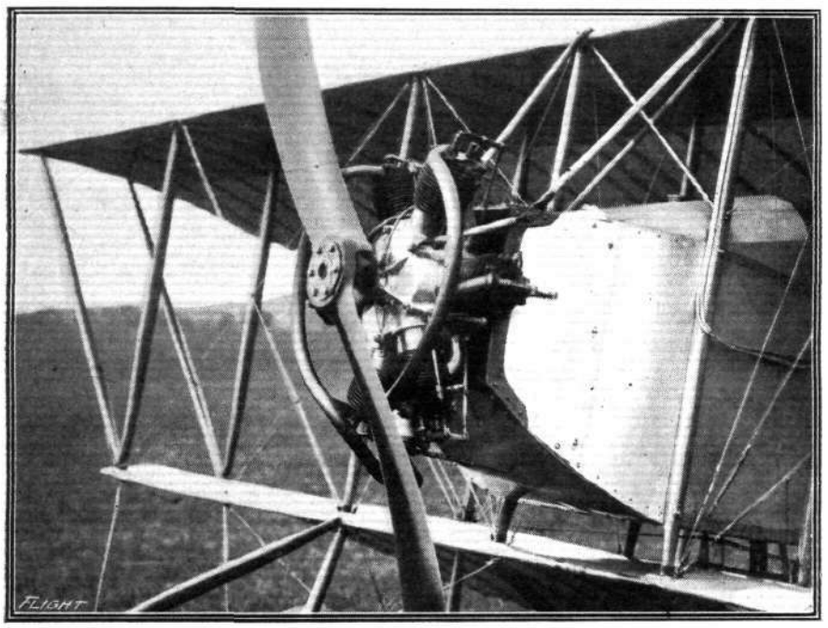
"Flight" Copyright.

accessories, uncommonly, that is to say, for a school machine.

Like all previous L. and P. biplanes, the latest *brevet* machine has a very strong family resemblance to the Caudrons, being characterised by the same type of flexible wings and tail plane, and having a similar short *nacelle*. The main planes have the two spars placed comparatively close together and a very wide flexible trailing edge. In order to provide a better entering edge the front portion of the top of the planes is covered for a distance of some 9 ins. rearward from the front spar with a strip of three-ply wood resting on top of the ribs and preventing the fabric from sagging. Only the part of the wings between the spars is double surfaced, the fabric being stitched down a few inches behind the rear spar, whilst the trailing portion of the ribs is enclosed in pockets formed by fabric. The reason for this form of construction is, of course, that when the flexible ribs bend upward when the machine is in flight no folds are formed as would have been the case had the whole of the wing been double surfaced. The same principle is employed in the tail plane, which, as our readers are no doubt aware, serves a double purpose in not only acting as an elevator by being flexed up and down, but also warps laterally in conjunction with the main planes, the control cables passing over king posts in order to ensure this action.

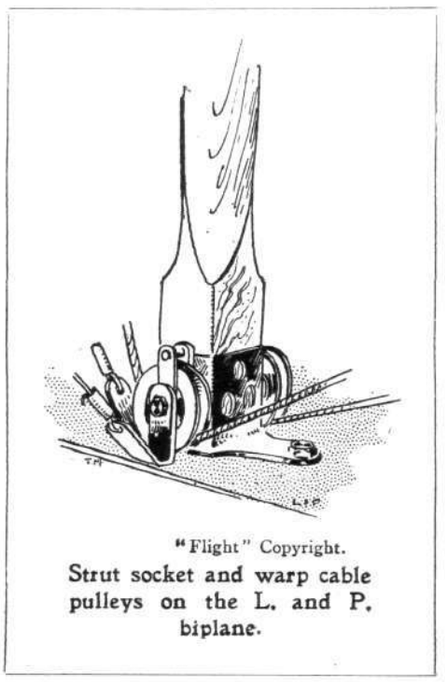
The undercarriage is formed by two pairs of wheels slung by means of rubber bands from the long skids, which are projected backwards to form the lower tail booms. The upper tail booms run from the rear spar of the upper plane to the vertical king posts carrying the control cable leads. Two partly balanced rudders are mounted on top of the tail plane, and are stayed by steel tubes fitted with wooden fairings.

The short *nacelle* which encloses the pilot and tanks is sufficiently wide and deep to afford plenty of elbow room, and the top covering which slopes up from the front to the instrument board deflects the air so that the pilot receives a minimum of draught. The pilot's seat, which is of the bucket type, is placed in the extreme rear of the *nacelle*, and in front of it is the central control lever which operates warp and elevator. A pivoted foot bar is mounted on the floor of the *nacelle*, and from this cables run back to the rudder. So placed that all the instruments can be readily



"Flight" Copyright.

The 35-40 h.p. Anzani engine on the L. and P. biplane.



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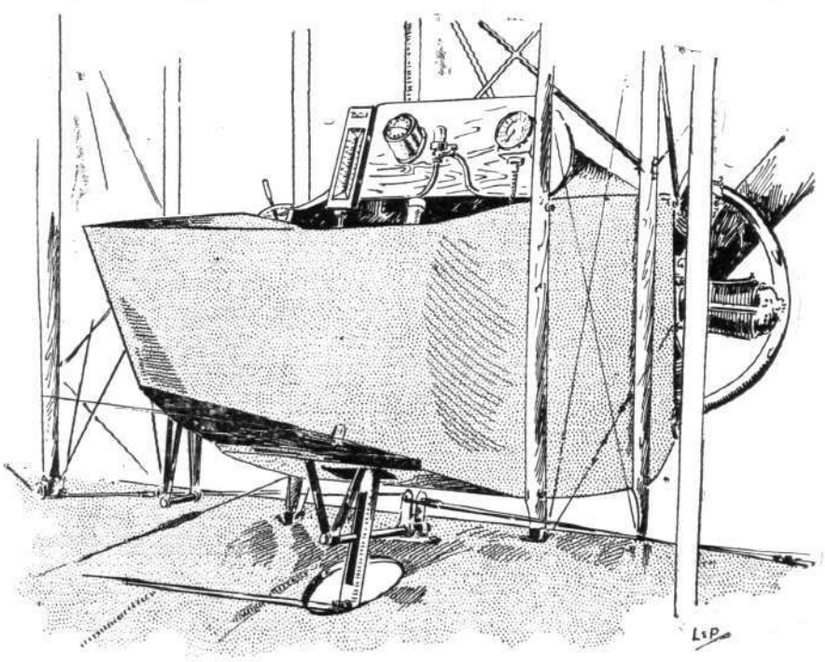
Strut socket and warp cable pulleys on the L. and P. biplane.



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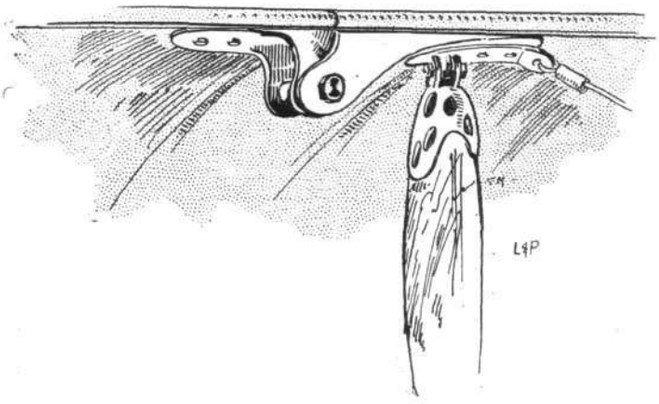
Sketch showing *nacelle* of the L. and P. biplane.

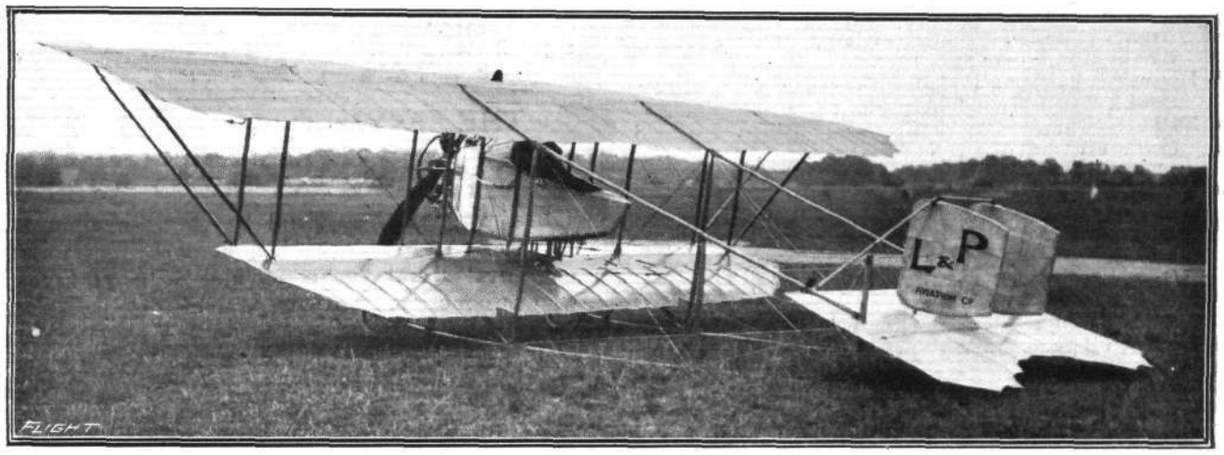


"Flight" Copyright.

The hinged joint of the top plane extensions on the L. and P. biplane.

seen from the pilot's seat is a dash board carrying, as we have already said, a very complete set of instruments including air speed indicator, tell-tale oil glass, clock, compass, altimeter, and revolution indicator. In front of the dash board and under the sloping bonnet are mounted the petrol and oil tanks, from where the fuel and lubricant run to the engine. The latter—a 35-40 h.p. Anzani—is mounted on a steel plate capping the front ends of the four *longerons* of the *nacelle*. Aluminium inspection doors on the side give access to the interior for inspection of oil pump and magneto.

Two exhaust pipes, to each of which are welded three short branch pipes attached by bolts to the exhaust ports in the top of the cylinders, carry the exhaust gases away underneath the *nacelle*, thus doing away with the continuous spray of smoke and oil with which the 35 h.p. engines are in the habit of regaling the pilot. Apart from adding in this manner to the comfort of the occupants, the exhaust pipes serve to a certain extent as silencers.



Three-quarter rear view of the L. and P. biplane. "Flight" Copyright.

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AT THE AUTOMOBILE SHOW OF A.D. 3000.

IN THE ARCHÆOLOGICAL SECTION.

By W. P. FRENCH.

"THAT," said Uncle Prosser, stepping before a large glass-case, "that, children, is the only perfect specimen now extant of the *Eques vulgaris aut hortus*, which, as you don't now learn obsolete and practically useless languages, I will translate for you; it means 'common or garden horse.'"

"Please, uncle, what is a horse?"

"I am not surprised at your question, my dear Tommy, for that overworked and underfed animal has long been extinct. From curious old prints and books we learn that what is known among savants as the 'great horse age' terminated early in the twentieth century. It was succeeded by the 'age of wheels,' which, developing as it did the muscular powers of mankind, made flying with artificial wings the easy matter we find it to-day."

"But what possible use could people have for such animals?"

"You must bear in mind, my dear Henry, that electricity was only known to these ancients as a force, which, transmitted through a wire, would deflect a needle at a given distance. As a motive power on a large scale it was practically unknown. Cumbrous engines, driven by steam or petroleum, were in use on steam-boats, trains, and road vehicles, but when I tell you that to get from London to Rome took 64 hours, and the idea of running over there for lunch and returning the same afternoon was simply unheard of, you will form a notion of their slow rate of progression."

"But surely they made use of the Percussion Post, uncle?"

"I am talking of days long anterior to that useful invention—days when people in cities could fill the air with smoke and noise, and no one dreamt of mitigating these evils. The pneumatic tyre and motor car were the first gropings in the dark, but for many years after these inventions the horse was used in a tractive capacity. That it was eminently unsuited for the purpose you may gather from the fact that they seldom lasted more than 50 years (Professor Bukvurrum only allows them half that age), required to be constantly fed and looked after, and rarely exceeded a speed of 18 miles an hour!"

"How is it, uncle, that we never encounter the skeleton of a horse in our geological investigations?"

"From what we can learn of that strange age, it appears that when these horses arrived at an advanced age they were devoured body and bones by packs of wild dogs called Folkshounds. These dogs are supposed by some historians to have been very fierce, and there is a picture in a semi-religious paper of the period entitled *Punch*, which shows two young men from London endeavouring to escape from the pack by riding off on horseback, pursued by these ferocious animals. Others, again, assert that both horses and hounds joined in the pursuit of a still fiercer and more predatory animal called the 'fox,' or fax, probably a species of bear, and the combats between these savage animals were regarded as 'sport' by the early English settlers in Britain. It is a great pity that the great fog and subsequent combustion of London destroyed so many of the archives, otherwise we might arrive at some more definite conclusions."

"Please, uncle, what monstrosity in machines can this have been?"

"That, my dear nephew, is the railway engine—*locomotus idioticus*—very different, as you see, from the electric motor of our own day, and rarely attaining a speed of more than 100 miles in an hour. Some think that the guard ran in front of the train holding a red flag, but as Sprinter's accelerative motoped had not been invented at the time I speak of, it is improbable that such was the case. During the recent excavations in London they have discovered what were at first thought to be catacombs, but are now believed to have been subterranean training grounds for these unsightly monsters."—*Motor News*.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Aviators' Certificates.

THE following Aviators' Certificates have been granted :—

1342 2nd Lieut. Raymond Gifford Burder, A.S.C. (Maurice Farman Biplane, British Flying School, Le Crotoy, France). June 3rd, 1915.

1343 Flight Sub-Lieut. Egbert Cadbury, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). June 19th, 1915.

1344 Lieut. Robert Henry Hubert Le Brasseur, R.F.A. (Maurice Farman Biplane, Military School, Northolt). June 21st, 1915.

1345 Lieut. Godfrey Wentworth Withington (Norfolk Regt.) (Maurice Farman Biplane, British Flying School, Le Crotoy, France). June 21st, 1915.

1346 Capt. C. R. S. Bradley (4th Indian Cavalry) (Maurice Farman Biplane, British Flying School, Le Crotoy, France). June 23rd, 1915.

1347 2nd Lieut. Robin Ernest Cuff (3rd Loyal North Lancashire Regt.) (Maurice Farman Biplane, Military School, Birmingham). June 23rd, 1915.

1348 Horace Gordon Dean (Maurice Farman Biplane, Military School, Birmingham). June 24th, 1915.

1349 Flight Sub-Lieut. Harold Frederick Towler, R.N.A.S. (Avro Biplane, Royal Naval Air Station, Eastchurch). June 26th, 1915.

1350 2nd Lieut. G. Wenden (Border Regt.) (Maurice Farman Biplane, British Flying School, Le Crotoy, France). June 26th, 1915.

1351 Lieut. Philip Le Grand Gribble (Hampshire Yeomanry) (Maurice Farman Biplane, Military School, Shoreham). June 26th, 1915.

1352 2nd Lieut. Edgar Llewellyn Crowe (The Buffs) (Maurice Farman Biplane, Military School, Shoreham). June 26th, 1915.

1353 Capt. L. W. O'Gowan (Scottish Rifles) (Maurice Farman Biplane, British Flying School, Le Crotoy, France). June 26th, 1915.

1354 Flight Sub-Lieut. Reginald Frederick Stuart Leslie, R.N.A.S. (Short Biplane, Royal Naval Air Station, Eastchurch). June 27th, 1915.

1355 Flight Sub-Lieut. Charles Frederic Latimer, R.N.A.S. (Short Biplane, Royal Naval Air Station, Eastchurch). June 27th, 1915.

1356 Flight Sub-Lieut. Richard Yarroll Bush, R.N.A.S. (Avro Biplane, Royal Naval Air Station, Eastchurch). June 27th, 1915.

1357 Flight Sub-Lieut. Geoffrey Goldingham Grose Hodge, R.N.A.S. (Short Biplane, Royal Naval Air Station, Eastchurch). June 27th, 1915.

1358 Flight Sub-Lieut. James Erroll Dunsford Boyd, R.N.A.S. (Short Biplane, Royal Naval Air Station, Eastchurch). June 27th, 1915.

French Certificates.

1907 A. G. Porter (Maurice Farman Biplane, Farman School, Etampes). April 29th, 1915.

1908 H. M. Sison (Maurice Farman Biplane, Farman School, Etampes). April 29th, 1915.

1909 D. D. Drury (Maurice Farman Biplane, Farman School, Etampes). April 29th, 1915.

1916 Major F. W. Ramsay (Middlesex Regt.) (Maurice Farman Biplane, Farman School, Etampes). April 29th, 1915.

1917 Capt. P. R. Groves (Shropshire Light Infantry) (Maurice Farman Biplane, Farman School, Etampes). April 29th, 1915.

1931 Benjamin P. Greenwood (Maurice Farman Biplane, Farman School, Etampes). May 6th, 1915.

THE FLYING SERVICES FUND
administered by
THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.	£	s.	d.
Total subscriptions received to June 23rd, 1915	9,267	13	11
Mrs. C. J. Brown	1	1	0
Mrs. M. F. FitzGerald	2	0	0
Total, June 30th, 1915	9,270	14	11

166, Piccadilly, W. B. STEVENSON, Assistant Secretary.

From Above.—Marrakech, a town in the Sahara Desert. This is one of the spots which aviation may open up for development, as the chief disabilities of communication with the world beyond will, by aeronautical help, be in a measure eliminated.

FROM THE BRITISH FLYING GROUNDS.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Instructors during week: Messrs. Manton, Russell and Winter. Straights with instructor: Probationary Flight Sub-Lieuts. Clayton, Douglas, Hardman, Murray, Pearson, Penly, Perham and Roach-Pierson. Straights alone: Probationary Flight Sub-Lieuts. Hardman, Hood, Pearson, Pennington and Watkins. Circuits with instructor: Probationary Flight Sub-Lieut. Hood. Circuits alone: Probationary Flight Sub-Lieuts. Hardman, Pearson and Watkins.

Beatty School.—The following pupils were out during last week, accompanied by the instructors:—Messrs. Banks (25 mins.), Bond (25), Chalmers (22), Crossman (25), Delves (40), Eaton (17), Fawcett (10), Fox (17), Jones (11), Robb (15), Ross (41), Tomlinson (25), Vickers (5), Theo (17), Sampson (8), Alcock (18), Collett (6), Litton (8), and Boyle (10). The instructors were Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodger, and P. A. Johnston, the machines in use being Beatty-Wright dual control and single-seater propeller biplanes and Caudron tractors.

Mr. Kenworthy, who has now for some time been taking extra practice at the school, flying alone on the 45 h.p. Caudron, put in 105 minutes during the week on this machine. Mr. Blandy also continued extra practice on the 45 h.p. Caudron. Exhibition flights were given on Thursday, Saturday, and Sunday by Messrs. Roche-Kelly, Prodger, Johnston, Kenworthy, and Blandy, and four passenger flights were taken.

Hall School.—The following pupils were receiving practice at the Hall Flying School last week: With Instructor Stevens, pupils doing straights, circuits, and figure "8's": Messrs. Snook, Furlong, and Mitchell.

Mr. W. T. L. Allcock, who has just taken his ticket at the Beatty School, Hendon.

With Instructors C. M. Hill and H. H. James: The following pupils were taking rolling practice: Messrs. Hamer, Booker, Cook, Yonge, Lieut. Jowett, Snowdon, Hatchman, Millbourne, Bell, Cownie, Bayley. The following pupils were doing straight flights with instructor H. H. James: Lieut. Phillpott, Lieut. Raymond-Barker, Mr. Gordon, and Mr. Gay. Machines in use: Hall tractor (Government type) biplanes.

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Flight Sub-Lieut. W. D. Wain, R.N.A.S., who has just taken his ticket at the Grahame-White School.

London and Provincial Aviation Co.—Monday, last week, weather fair. Lieut. Nethersole took excellent ticket; his first landing being actually on the mark. Mr. Irwing half-circuits. Messrs. Dower and Minter straights. Messrs. Adams, Sykes, Wood and Pullinger rolling.

Tuesday, Wednesday and Thursday, very windy.

Friday, Messrs. Dower and Minter straights; Messrs. Adams, Sykes, Wood, Scott, McOnie rolling.

Saturday, Messrs. Dower, Minter and Pullinger straights; Messrs. Jacques, Sykes, Adams, Wood and Gunner rolling.

Sunday, Messrs. Dower and Minter half-circuits; Messrs. Pullinger, Everidge, Jacques and Wattine straights; Messrs. Adams, Wood, McOnie and Scott rolling.

Ruffy-Baumann School.—Very unpropitious weather prevailed last week, so that considerable tuition has been practically impossible, but taking the amount of work comparatively, the results have been quite excellent. Bertram Charles Bell, of the R.N.A.S., passed for his certificate on Monday last in very good style. Both landings were above the usual performance, and this pupil is to be congratulated on his fine exhibition. The following pupils have been out on the 60 h.p. Ruffy-Baumann biplane and the 50 h.p. Caudron-type biplane: E. C. England-Derwin, Lieut. Balfour, T. Cole, W. Gardner, A. Dyson-Perrins, Fenning, and T. C. Wilson—the latter pupil still doing very well. **Instructors**: Edward Baumann, Felix Ruffy, Gino Virgilio, and Clarence Winchester.

Now that the new Ruffy-Baumann biplane (50 Gnome-Caudron-type) is out, more vacancies have arisen, and enquiries from prospective pupils would be welcomed.

EDDIES.

IN a recent copy of *Flugsport* I came across an appreciation of the M. Farmans, which, emanating as it does from the camp of the arch enemy, is highly flattering to the makers, although one has to remember the Germans are stated to be largely pinning their faith now to craft of the Farman type. After pointing out that nobody in France has influenced biplane design to a greater extent than have the Farman brothers, and giving a short *résumé* of the history of the two firms, follows a very detailed description of the M. Farman biplane, the excellent workmanship of which is highly praised. It is stated that in the present war the Farman biplanes are Germany's most dangerous opponents in the air, and those which most nearly equal the German *fuselage* machines. (One could not, of course, expect a German journal like *Flugsport* to acknowledge that the Farmans were quite equal to their own tractors.) The article closes with a sentence which is worth translating and quoting in full: "Since already several Farman biplanes have been captured in the western theatre of war our own officer-pilots have learned to fly these machines, and are using them in the service of the German Army." There is evidently not much to find fault with in the old "mechanical cow."

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It is quite curious to see how the attitude of the German journal referred to above changes when talking about American-built aeroplanes. In a short par. in the same issue of *Flugsport* as that giving the Farman article, the American aircraft manufacturer is hauled over the coals for supplying aeroplanes to Germany's enemies. The American machines described in the American aeronautical press, our esteemed contemporary foeman says, are the work of amateurs compared with German products, and with the exception of Curtiss there can, it continues, be no talk of an American aircraft industry. The Thomas Brothers firm seems to be blooming, and it is somewhat curious, the journal continues, to read an advertisement like the following:—Thomas Brothers Build Aeroplanes for Foreign Power. (The last sentence is printed in English.) Seems to be a case of sour grapes.

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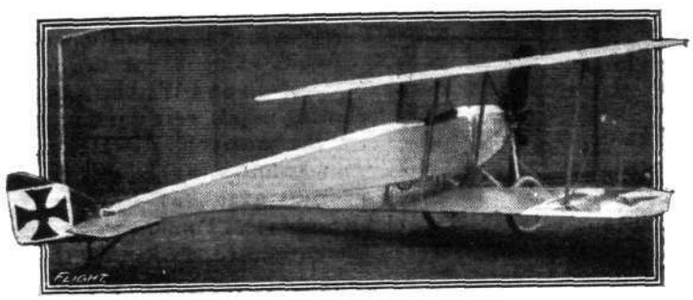
There has been quite a lot of talk lately in certain quarters about a German firm building a copy of the Bristol scout, the machine in question being the Rex biplane. From the accompanying illustration it will be seen that there is very little resemblance between the Rex and the Bristol. About the only similarity is the staggering of the planes and the fact that only one pair of struts on each side of the *fuselage* separates the main planes. The *fuselage* is entirely different, being if anything more reminiscent of the Morane than of the



Bristol scout. The inner pairs of inter-plane struts are placed outside the body, and the elevator is of the balanced type, whilst no tail plane is fitted. If the Rex firm have been building this machine under the impression that they were making a copy of the Bristol scout, they are likely to meet with a few disagreeable surprises as regards performances, for the five-cylinder R.A.W. engine with which it is fitted looks capable of about 40 h.p. at the most.

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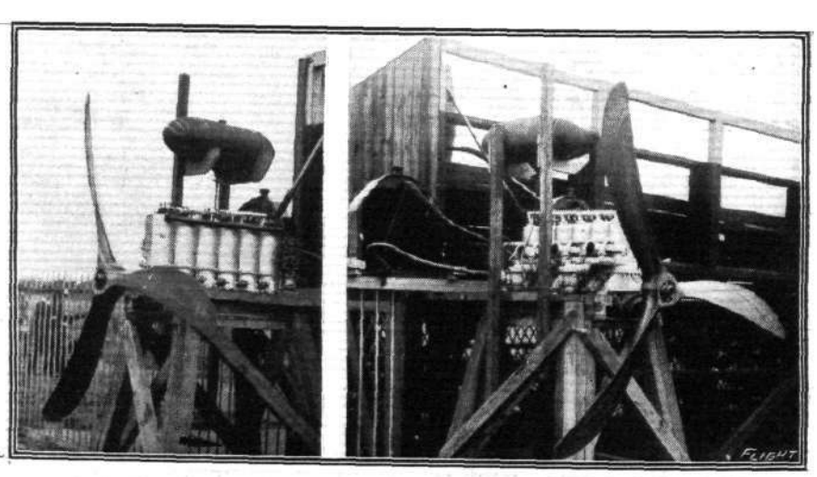
Some time ago reference was made in "Eddies" to the new 100 h.p. 6-cyl. two-stroke Roberts motor that was awaiting trials in the Beatty sheds. The pressure of work in other directions has now been reduced sufficiently to get the time to construct a stand for this engine, and a preliminary bench test run or two have been given. It is too early as yet to express an opinion of the merits of the Roberts motor, since the tests that have been made have not been searching enough to detect any weaknesses that longer runs may disclose, but so far as it is possible to judge from the preliminary runs, one thing at least seems to be fairly well established, there is a marked absence of vibration. This was, perhaps, only to be expected from a 6-cyl. two-stroke engine, although I am told that 4-cyl. two-strokes of a similar type were rather bad in this respect. Further trials will now be made to determine the power output and fuel consumption, and if these two important factors are found to substantiate the claims of the makers as well as did the smooth running, and if severe trials fail to bring to light any



Two views of the 100 h.p. Roberts engine on the test bench rigged up for it in front of the Beatty shed.

defects in design and construction, we may look forward to a new type of Beatty machine taking the air out Hendon way.

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After a somewhat prolonged sojourn, during which a 125 h.p. Anzani engine has been fitted instead of the original 100 h.p., the Mann biplane is expected soon to make its first test flights at Hendon in its new form. The fitting of a heavier engine, while intended to furnish the extra power that was apparently wanted, has, of course, necessitated some slight alterations in order to retain the happy union between c.g. and c.p. To this end the top plane has been shifted forward several inches, adding considerably to the stagger and incidentally to the appearance of the machine. Several improvements have been effected in the transmission gearing, which now looks much more robust, and minor alterations to the tail planes have also been carried out. The final erecting and tuning-up process has been considerably delayed as a consequence of the unevenness of the floor of the tent in which the machine is now housed, but in spite of these difficulties there is every prospect that the "Mann" may be out during the coming week-end. The originality of the machine should prove an additional attraction to Hendon, and I should advise those of my readers who are interested to get up there and have a look at it during the next couple of weeks, as there is no telling when it will disappear out over the Welsh Harp.

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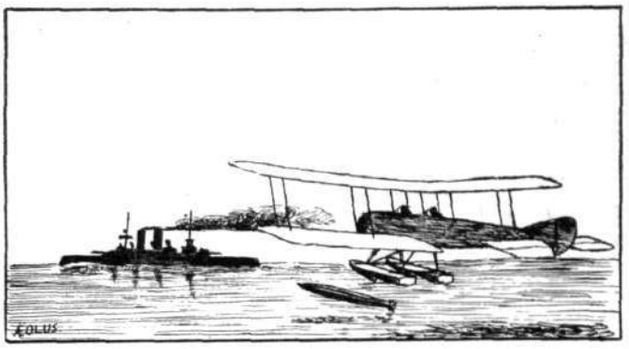
Many as have been the uses to which aeroplanes have been put during the present war, there is no indication that the end has been reached yet; on the contrary, the variety of purposes for which the aeroplane has proved its utility may be said to be increasing almost daily, a matter of some gratification to a journal that has from the very first strongly expressed its faith in the immense possibilities of aircraft. One of the latest suggestions for a new field of activity has been offered by Rear-Admiral Bradley A. Fiske, of the U.S. Navy, and is to the effect that it would be entirely feasible to deliver torpedo attacks from aeroplanes or seaplanes. The difficulties of approaching within range with the ordinary means of torpedo attack, *i.e.*, with torpedo boats and destroyers, it is pointed out by Mr. Park Benjamin in the *Independent*, are far greater than that of hitting the target after arrival. It is chiefly in this respect that Admiral Fiske regards the aeroplane as especially suitable, as its great speed and manœuvring power would render it an extremely difficult target. The attacks would in all probability be delivered at night, when it would be next to impossible for the enemy's ships to see the aeroplane, while the latter, it is thought, would be able to discern the dark form of the ship against the lighter background of the sea. The aeroplane would then approach at a good height and when within range would come down in a series of steep



spirals with the engine cut off, and probably to the leeward of the ship, in order to minimise risk of being heard. From an altitude of a few feet and at a distance of 1,500 to 2,000 yards the torpedo would be launched against the enemy.

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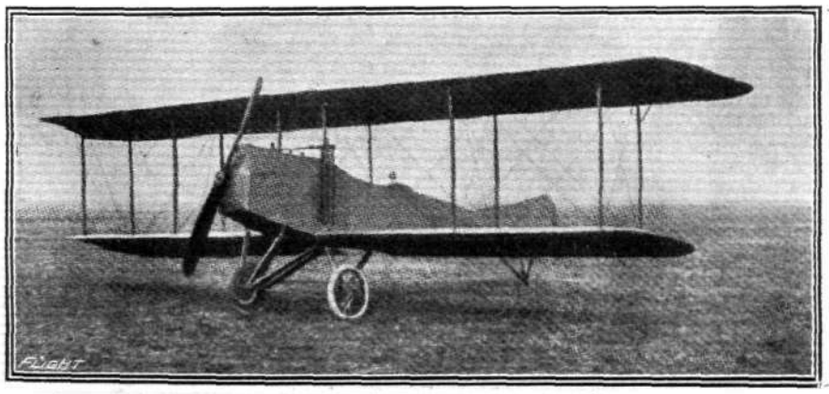
No radical alterations, it is thought, would be necessary either in the torpedo or in the aeroplane. The modern seaplane with high-powered engine would probably be able to carry the weight of the smaller size torpedo now in use in the service, at any rate if the attack were delivered by a machine starting from a mother ship and therefore having to cover a comparatively short distance, consequently needing only a small amount of fuel. If desired there should be no great difficulty in making a slightly smaller torpedo, which would then have to be launched at a shorter distance from the target. The torpedo would be suspended under the framework of the seaplane and a lever operated from the pilot's or observer's seat would first trip the pin that opens the valve of the compressed air flask supplying the motive power, and then release the torpedo from its attachments. Naturally a great amount of risk would have to be run by the aviators, but the exchange of one or at the most two men and one machine for a battleship and a number of men would appear to justify such risks. If several seaplanes carrying torpedoes were sent against one ship the chances are that at least one of them would succeed in getting within range and hitting the mark.

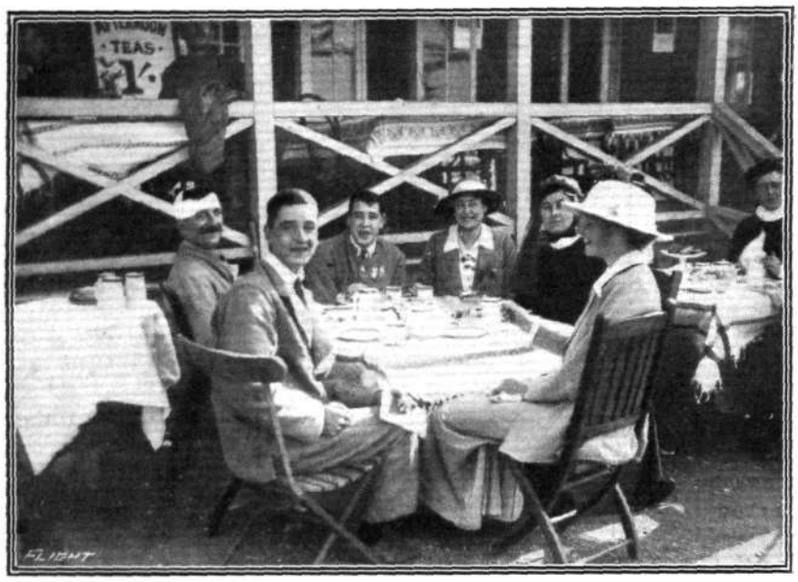
"ÆOLUS."



The latest Sloane Military Tractor Biplane. — This machine differs, apart from details, from that described in our issue for May 21st, in the three-wheel landing carriage, the vertical tail fin, and the fitting of a 90 h.p. water-cooled Kirkham engine.

FLYING AT HENDON.

PUNCTUALLY at 3 p.m. last Saturday afternoon M. Osipenko ascended on the 50 h.p. G.-W. school 'bus and put up the first exhibition flight. By the way the machine rocked and pitched, it was evident that there were plenty of "bumps" up aloft. Following close upon Osipenko's tail planes came J. H. Moore on his 45 h.p. L. and P. biplane. He was soon up to a couple of thousand feet or so, where conditions appeared to be steadier, and after several circuits he descended with a number of pretty spirals. Whilst W. Birchenough was testing an Aircraft Co.'s Maurice Farman "shorthorn," Marcus D. Manton ascended on the 50 h.p. G.-W. school 'bus, and R. Kenworthy took up the 45 h.p. Beatty-Caudron. This latter pilot was flying the same machine last Sunday week. By a slip we gave the pilot's name in our last report as P. A. Johnston. J. S. B. Winter presently went up on the G.-W. school 'bus, and shortly after a Government biplane departed from the aerodrome for some destination unknown after executing some extraordinary evolutions that left little doubt as to the identity of pilot and machine. Moore then took a passenger on his L. and P. biplane, and W. Roche-Kelly ascended on the 50 h.p. Beatty-Wright biplane. The next in the air was Osipenko on the G.-W. school 'bus, after which E. Baumann made two passenger flights on the 50 h.p. Ruffy-Baumann biplane. C. B. Prodger also took up a passenger on the 60 h.p. Beatty-Wright. G. K. Blandy was up next on the Beatty-Caudron, and then, conditions having somewhat improved, various school machines made their appearance. Although by now it was practically the end of the day, machine after machine got going, and at one time about half-a-dozen were up at the same time—including two Avros and a Maurice Farman paying a visit to the aerodrome. The 100 h.p. G.-W. five-seater biplane, with Osipenko piloting, was also at work with passengers. A large party of wounded soldiers with the nurses visited the aerodrome and appeared to be spending a very enjoyable time.



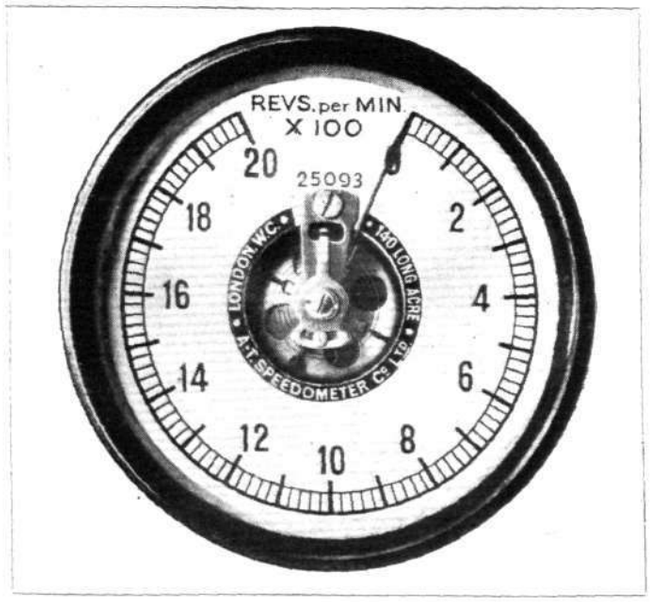
ARE WE DOWNHEARTED?—Some of our wounded at Hendon Aerodrome.

The wind and rain, in spite of their might, suffered defeat in their attempt to prevent flying on Sunday afternoon. However, mere man did not have it all his own way, as one pilot and machine received what was very nearly a knock-out "blow," for M. Osipenko, accompanied by a plucky passenger, on the 50 h.p. G.-W. school 'bus, was forced to descend in a field just outside the aerodrome. Fortunately no damage was done, and he was able to fly back later. Three other pilots took part in the battle of the elements :—Marcus D. Manton on the 50 h.p. G.-W. 'bus, J. H. Moore on his 45 h.p. L. and P. biplane, and E. Baumann on the 50 h.p. Ruffy-Baumann biplane.

THE A.T. REVOLUTION COUNTER.

THE A. T. Revolution Counter for aero engines, manufactured in England by the A. T. Speedometer Co., of 140, Long Acre, London, W.C., is identical in principle to the well-known car speedometers of the same make. This instrument is of the magnetic type, provided with a special compensating device, by which it is entirely unaffected by variations in temperature or change of altitude.

Briefly, the action of the A. T. rev.-indicator is as follows :—A small inverted aluminium cup is mounted between jewel bearings within a bell-shaped steel magnet, which is connected to the driving mechanism from the engine and so revolves with the latter. In so doing, the magnetic lines of force flowing from pole to pole produce eddy currents of electricity in the aluminium cup, which thereby tends to revolve with the magnet. This movement is restrained by the action of a delicate hair spring, so that the cup can only turn on its axis by an amount that is proportional to the revolutions of the magnet. As the strength of the magnetic field is increased by the increasing speed of the magnet's rotation, the resistance of the spring is correspondingly overcome, and the cup is turned in proportion. Thus it will be seen that a pointer attached to the cup, moving over a suitably graduated dial, will indicate the number of revolutions made by the engine. The aluminium cup, together with its spindle, pointer, and spring, only weighs about two grammes, and the clearance between the cup and the magnet is 1 mm. A special form of flexible drive from the engine to the instrument is employed, consisting of a chain of steel links—better described, perhaps, as a series of small universal joints connected together—enclosed by a steel spring liner, which is itself within metallic flexible tubing.



The A.T. revolution counter for aeroplane engines.

FLIGHT

AIRCRAFT AND THE WAR.

IN the Austrian official news of the 23rd it was stated :—

"Italian airmen dropped bombs on Gorizia."

In the German *communique* of the 23rd it was stated :—

"South of Lunéville one of our aeroplanes brought down an enemy aviator."

A Central News correspondent in Northern France, writing on the 23rd inst., said :—

"French aeroplanes have thrice recently spread destruction among the German reserves by dropping bombs in their midst."

The *Daily Mail* correspondent at Rotterdam, writing on the 24th, said :—

"Regularly the Allied aeroplanes scout over the harbour, and at night the Germans send up numerous illuminated parachutes attached to rockets, which light the sky over a large area."

In *Le Journal* of the 24th there was the following account of a daring piece of work by a French pilot and his mechanic :—

"The aeroplane arrived behind the German trenches in Northern France and three bombs were thrown on a railway line and upon an armoured train. A hail of shell was at once directed from the train upon the aeroplane, and one shell exploded a few yards from the captain's head. He became insensible.

"The aeroplane was then 3,000 metres above the earth. The mechanic immediately seized the steering gear of the machine, which, however, began to fall into the German lines. The mechanic threw more bombs as he fell, and was able at the same time to direct the aeroplane so that it came lightly to the ground. He started it immediately, with the result that the aeroplane and its occupants ultimately came safely to earth well within the French lines."

A Reuter correspondent at Brescia on the 24th inst. reported :—

"Airships have been obliged to return from scouting expeditions owing to a dense fog and bad weather."

An Exchange message from Paris on the 25th said :—

"A Taube about four o'clock yesterday morning attempted to fly over Hazebrouck. It was fired at by the Allies' artillery and compelled to return. In passing Borre the Taube dropped a bomb, killing a cow.

"At the same time several bombs were dropped by another machine in the neighbourhood of Cassel, causing but little damage. A gasometer belonging to the old gas company, which is no longer a going concern, was demolished.

"The guns of the Allies fired at the German aviator, and he was put to flight."

In the *communique* issued from the German General Headquarters on Saturday :—

"Since the commencement of the great struggle at Arras our airmen have been contesting with enemy aviators the dominance of the air. This struggle has entailed losses for both sides, and ours have not been in vain. For some days it has been obvious that we prevail."

The Central News correspondent in Northern France, writing on Saturday, said :—

"British aviators have recently dropped bombs at various points in Flanders, notably at Roulers, where two ammunition trains and a store house for shells were blown up, 40 soldiers and a number of officers being killed."

Writing on the previous day he said :—

"With reference to the recent air raid on the airshed at Evère (Brussels), it can now be stated that the airship destroyed was a Parseval, and not a Zeppelin. Fourteen soldiers were killed and eight wounded."

Writing from Porrentruy (Switzerland) on Saturday a *Daily Mail* correspondent said :—

"Allied airmen have destroyed the railway viaduct at Tagolsheim, about a mile south of Illfurt, Alsace. Altkirch in consequence is cut off from Mulhouse."

The Turin correspondent of the *Petit Journal* last week reported :—

"At midnight on Thursday an Italian aeroplane dropped bombs on the Ferriera metallurgical works at Trieste, inflicting considerable damage. The aviators were cheered by the inhabitants."

The *Daily Mail* correspondent at Rotterdam on Sunday reported :—

"A report has reached me from the frontier that a Zeppelin was seen in difficulties just over the Dutch border at 5 p.m. yesterday. So far I have not been able to confirm the statement."

In a message from Milan to the *Daily Telegraph* on Sunday, Mr. A. Beaumont said :—

"In revenge, Austrian aeroplanes have made frequent appearances within the last few days, and attempted to drop bombs, with very mediocre results."

The *Daily Mail* correspondent at Athens, writing on Sunday, said :—

"Great aeroplane and other activities indicate the probable renewal on an unprecedented scale of the Allies' attempts to pierce the Turkish defences in Gallipoli in the very near future."

Writing from Amsterdam under date June 28th, the *Morning Post* correspondent said :—

"This morning two Zeppelin airships were sighted north of the islands of Ameland and Schiermonnikoog, going westward.

"Eight Allied aviators appeared last Thursday over Courtrai, and others were also seen in various places in Flanders, including Emelgem and Ingelmunster. The aviators were everywhere heavily fired at, but none were hit. Last night two British aeroplanes were seen above Ghent. Both returned safely, notwithstanding a violent fire from anti-aircraft guns."

In the "wireless" news sent out from Berlin on Monday there was the following :—

"We were especially successful in the southernmost parts of our battle front against the enemy airmen. In an aerial battle two enemy flying machines were shot down north of the Schlucht Pass and at Gerardmer (Alsace), while two further aeroplanes were forced by our artillery at Largitzen and Rheinfelden to descend at Schwerle, in Swiss territory."

Contradicting the official German reports, the Bruges correspondent of the *Telegraaf* supplied the following details on Monday :—

"No attack took place against Iseghem.

"During the past week Flanders was visited by Allied airmen, who escaped, and were not shot down as reported in the German official *communique*.

"Two days later another aeroplane appeared in the same district, but its bombs caused no damage.

"On Thursday aeroplanes were hovering above Courtrai, but did not drop bombs. All returned safely, though heavily bombarded by the Germans."

In a *communique* issued from the Austrian Army Headquarters on Monday it was stated :—

"Yesterday a naval aviator bombarded near Villa Vicentina a hostile captive balloon, and obliged it to descend. The same aviator to-day dropped successfully heavy bombs on the hostile artillery park at San Canciano, and badly damaged a steamer at Sdobba."

The Scutari correspondent of the *Corriere d' Italia*, on Monday reported :—

"Italian aeroplanes flew over Cattaro yesterday. They dropped a number of bombs, which did very serious damage to the fortified works and harbour."

The *Times* Paris correspondent on Tuesday reported :—

"A squadron of German aeroplanes made an abortive attempt to bombard Hazebrouck yesterday."

Mr. H. Devitte, writing to the *Daily Express* from Geneva on Tuesday, said :—

"A German aeroplane which crossed the frontier at Largin yesterday was bombarded by Swiss troops. It then threw bombs near Delle Station, one of which fell only 400 yards from a party of Swiss soldiers. Happily there were no casualties."

The *Daily Mail* correspondent at Porrentruy (Switzerland) wrote as follows on Tuesday :—

"The French airman who bombed the Zeppelin sheds at Friedrichshafen was M. Gilbert, one of France's finest pilots and the man who flew from Paris to Madrid in 1913.

"M. Gilbert had afterwards to land on Swiss territory through engine trouble, and has been interned. A French contributor to

the *Democrate*, of Délémont, who has seen M. Gilbert, writes as follows :—

". . . . 'Gilbert asked the Commander of Rheinfelden if he could take the wingtip of his aeroplane bearing the tricolour which was riddled with German bullets. He was told that he would find his machine at Berne.

"'Gilbert then went to look at the machine, which had not been much damaged. When wanting to land Gilbert started to *vol plane* from a great height ; when he tried to turn to the right the propeller hit the ground and one of the blades was damaged. Gilbert jumped out and tried to put the machine straight again and restart the engine, but in vain, and when the Swiss soldiers came up he surrendered.'"

In a message from Rotterdam on Tuesday the *Daily Mail* correspondent said :—

"I learn from Berne that as a result of the raid by a French airman on the Friedrichshafen Zeppelin sheds on Monday one shed caught fire and there was a panic among the workmen."

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"FLIGHT" A HOUSEHOLD WORD.

"FLIGHT" has without doubt now entered intimately into the life of the nation. It is a household word, we are glad to know, from many indications. It "crops out" in all sorts of little unexpected places, and has several times been embodied in prose works, serious and otherwise. Needless to say, its position in the world of aeronautics is a source of much gratification to all who have been associated with it on the staff from its foundation, when it had so much missionary work to do against very heavy odds. Another instance of its acceptance without any accompanying explanation occurs in the *Daily Mail* on Wednesday this week, where in the course of a delightful little one-column war-scented story of "My Old School—Memories and the Present," by an Old Boy, an unforced and natural mention is made of "Flight" : "Farrow was reading 'Flight.' Ever since Stokes had come down on the cricket field in his aeroplane out of the blue—it was the term after he left—the R.F.C. had been 'the top arm' in the school." There's not much in this reference to our little paper, but it is small things like this after all that tend to repay for much thought and labour, in a world where these stocks-in-trade do not necessarily always spell success.

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The Output of Military Aeroplanes.

IN the House of Commons, on Tuesday, Mr. Lynch addressed the following questions to the Minister of Munitions :—

"1. Whether, in view of the fact that aeroplanes have shown great possibilities of use, apart from their function of scouting and otherwise acting as adjuncts to the military and naval forces, he will proceed to develop the aeroplane service as a new arm of the offensive and defensive force of the nation.

"2. Whether, by creating a department of his office devoted to fostering the production of aeroplanes by co-ordinating the efforts of all private firms engaged in their manufacture, and by establishing new factories, it would be possible to increase the output to 10,000 within the next six months ; and whether he will take the steps necessary to that end.

"3. Whether, in view of the despatch of Sir John French of November 20th, 1914, referring to aeroplanes, and saying that no effort should be spared to increase their numbers, he will speed up the production by selecting standard types for the machines themselves, and all the parts in particular, and by organising a sufficient number of workshops in regard to this object."

Mr. Tennant, the Under-Secretary for War, stated that the Minister of Munitions had asked him to answer the questions, because the matter of aeroplanes is not in his province. As Mr. Lynch declined to receive answer from anyone but Mr. Lloyd George the matter dropped. We understand, however, that the replies prepared by Mr. Tennant were as follows :—

"1. The aeroplane service has been, is being, and will be developed as rapidly as conditions permit, and later on we hope to obtain the assistance of the Ministry of Munitions for the provision of the necessary *matériel*.

"2. I must refer to the answer I gave on June 22nd, to which I have nothing to add."

[In that reply Mr. Tennant said : 'No good purpose would be served by giving orders on so large a scale (3,000) for the production of aeroplanes at present.']

"3. The suggestion has been anticipated ; arrangements in that direction have already been made."

Air Raid, &c., Damage Claims.

REPLYING to a question by the Earl of Camperdown in the House of Lords on Monday, the Lord Chancellor said that up to the present the amount awarded to persons whose property had been destroyed or damaged by air raids or bombardment by the enemy was £90,038. The amounts paid to individuals were to indemnify them against the actual loss and not for consequential damage or loss. For instance, if a man's shop were burnt down, he would be paid the value of his shop, but not for the loss of any profit he might have made if the shop had not been destroyed. With regard to the principle of compensation to be applied in the future, it was obvious that if a measure was going to be introduced it would be undesirable to state in plain terms that the Government accepted any legal liability. For the rest the Government were anxiously considering the matter, and were pressing it forward.

Lord Southwark, as President of the London Chamber of Commerce, pointed out how grave and urgent the matter was for business interests in the City of London.

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Lord Parmoor said that the claims brought before the Government in which money compensation was asked amounted to about £150,000. His Committee, in advising the Government in the matter of figures, always had in mind the possibility of an insurance scheme. With regard to claims for injury to persons the Committee were guided by the principles of the Workmen's Compensation Act.

Air Raid Casualties.

REPLYING to a question addressed to the Prime Minister in the House of Commons by Mr. Kellaway, Mr. Brace said that there had been fourteen attacks by hostile aircraft, extending over a wide area, and chiefly directed against unfortified towns, villages, and country districts.

The total casualties in these raids were : Killed, 56, of whom 24 were civilian men, 21 women, and 11 children. Wounded, so far as could be ascertained, 138, of whom 86 were men, 35 women, and 17 children.

An Aeroplane from the Malay States.

THE Secretary for the Colonies has issued the following announcement :—

"Mr. Eu Tong Sen, an unofficial member of the Federal Council of the Federated Malay States, has presented an aeroplane to the Military Wing of the Royal Flying Corps. The gift has been gratefully accepted by the Army Council."

Warning *re* Foreign Correspondence.

IN a notice issued on Saturday, the War Office reminds the public that all correspondence between the United Kingdom and foreign countries is censored and that certain topics are forbidden, such as particulars of Zeppelin attacks or the localities visited by hostile aircraft.

Rudge-Whitworth Making Aeroplane Parts.

IT is indeed good news for us to be able to announce that Messrs. Rudge-Whitworth, Ltd., of Coventry, the world-famed makers of the Rudge-Whitworth detachable wheels and other specialities associated with their name, have seriously entered the aeroplane industry. They are in a position to turn out various metal parts, especially those for B.E. 2c aeroplanes, in almost unlimited quantities. Probably no firm in the kingdom has a more suitable range of machine tools for such a purpose as this, and the high reputation which has been built up by Rudge-Whitworth products ensures that their work will be fully up to standard as regards quality and accuracy and ability to pass any tests imposed by the Government.

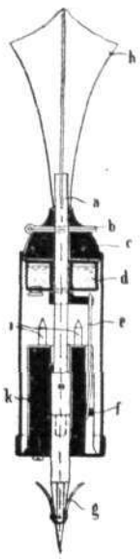
The Ruffy-Baumann Booklet.

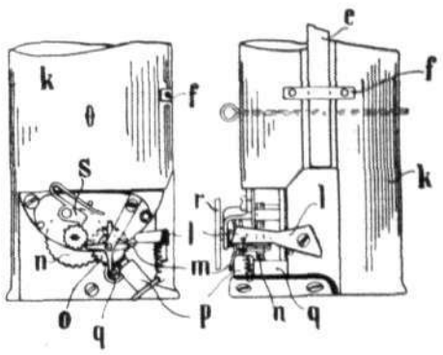
A BOOKLET which should be of interest to those who are contemplating learning to fly has just been got out, describing very fully the methods of instruction employed at the Ruffy-Baumann School at Hendon. The brochure is copiously illustrated with photographs of the 50 h.p. Caudron type and 60 h.p. R.-B. biplanes, and the instructors at the school. There is also an informative article, "Flying as an Art," by "Ornis." Those who are thinking of taking up aviation can be safely advised to send to the Ruffy-Baumann Flying School, Hendon, for a copy of "How to Fly."

FLIGHT

INCENDIARY DARTS.

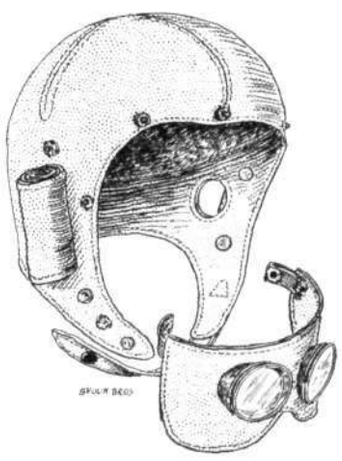
AN interesting description of a type of incendiary dart that is said to have given excellent results is published in a German aeronautical journal. The mechanism consists, as shown in Fig. 1, of a central spindle, a, connected to the dome shaped top, c, of the outer casing of the dart by a thin copper split-pin, b. A small quantity of petrol is contained in the reservoir, d, which is soldered to the under side of the domed top, c. On impact the soft copper split-pin is easily sheared, thus allowing the petrol reservoir to slide down the spindle until it strikes the points, i. The shock of the impact is sufficient for these points to pierce the bottom of the reservoir from which the petrol now runs down into the lower part of the dart, k. Simultaneously the metal strip, e, slides down under the bar, f, and sets the clockwork mechanism in motion by striking the rocking lever, l, which releases the ratchet wheel, m. The driving wheel, n, of the clockwork mechanism is now free to revolve, and consequently the friction roller, o, on which the metal brush, p, is bearing begins to rotate rapidly producing a rain of sparks that ignite the petrol by means of the wick, q. An explosion of the outer casing of the dart follows, spreading the fire over the object on which the dart has been dropped. In order to ensure that the dart will drop in a vertical position the upper or rear portion of the spindle is provided with "feathers," while the pointed nose of the dart is fitted with barbs. For use against airships a form of steel wire basket, terminating at the top in six claws or hooks, can be slipped over the dart from the lower end in such a manner that the hooks occur slightly above the centre of the outer casing. The object of these hooks is of course to prevent the dart from sliding off the rounded sides of the envelope of the airship. The length of the dart is about 16 ins. It measures 3 ins. in diameter and weighs a little over 2 lbs.



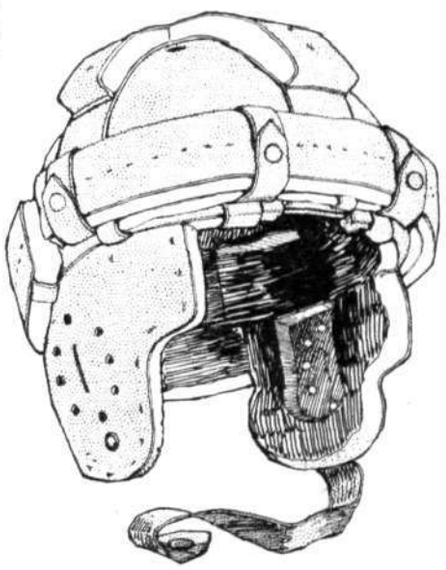


AVIATORS' HEAD-GEAR.

ALTHOUGH it has been demonstrated on several occasions that the wearing of a safety helmet has saved the wearer from serious injury, there are still many who prefer to keep their heads more or less unencumbered. In this case the tight-fitting leather "skull-cap" as used by motorists is very popular, and is certainly better than the ordinary cloth cap. A very neat and handy skull-cap is sold by Messrs. Brown Bros., Ltd. of Great Eastern Street, London, E.C.



This cap, which is shown on the left of the accompanying illustration, is made of fine nappa leather with an inner lining of silk. With the cap is a leather mask having a special form of goggles giving a wide field of vision. This mask is attached to the cap by means of push-button fasteners, so that if required it can be removed altogether, or by unfastening the two lower button fasteners the mask can be folded up above the eyes. Holes are cut in the cap over each ear, and leather rolls, also secured to the cap by button fasteners, protect the ears from wind pressure. The cap is fastened under the chin, three fasteners being provided so as to give varied adjustment. The price of this cap, complete with goggles, is 15*s.* 9*d.*



A very light safety helmet, illustrated by the right-hand sketch, is also made by the same firm. It is made of strong leather heavily padded with felt. A protective pad, extra thick in front, runs right round the base of the helmet, whilst another is fitted to the crown. Other pads mounted below the helmet protect the ears and the back of the neck. The inner lining is of silk, and vent holes are provided both in the crown and in the ear pads. The price of this helmet is 33*s.* 6*d.*

A Belgian Pilot Killed.

ACCORDING to the Etampes correspondent of the *Petit Parisien*, the Belgian pilot Toccsen was killed while landing from a flight at the Sauvage Aerodrome, near Etampes. His companion, Corporal Kosyns, was seriously injured, but it is hoped that he will recover.

Fatal Accident in U.S.A.

THROUGH his machine falling from a height of 400 ft. at Troy, N.Y., on May 31st, George L. Newberry received such injuries that he died a few minutes later in hospital.

A Swiss Fatality.

THE *Morning Post* correspondent at Berne on the 24th ult. reported :—

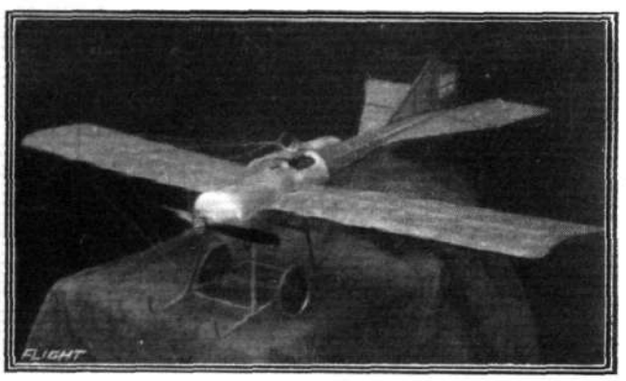
"To-day two Swiss aviators, Lieutenant Lugrin and Ober-Lieutenant von Keenel, while about to land at the Swiss aviation ground at Dübendorf, fell with the monoplane on which they were travelling. Both officers were seriously injured, and Lieutenant Lugrin has since died.

"The monoplane was completely smashed."

Models

Edited by V. E. JOHNSON, M.A.

A Scale Model of the Blackburn Monoplane. BY F. MABB. "HAVING grown tired of the ordinary flying model, I decided to branch out into something more interesting. This took the form of a scale model. Being able to examine the Blackburn monoplane pretty closely, which, before the war, was flying frequently up north here, I decided to make a model of this machine. As I have made two models of this type, and met with some success with both, I herewith give a few details and experiences of them. The first machine: Span 3 ft., chord 7 ins., overall length 2 ft. 6 ins., plane



Mr. F. Mabb's model.

surfaces made of piano wire, single surface, *fuselage* built up, using $\frac{9}{16}$ by $\frac{1}{8}$ birch for the longitudinals and three and five ply for the inter-sections, *fuselage* covered one-third of the way with $\frac{1}{32}$ aluminium, fitted with a cowl under which runs the three geared motor connected up to three skeins of $\frac{1}{4}$-in. strip rubber, each skein consisting of four strands; these were coupled up to a 10 in. tractor screw of 15-in. pitch, giving 1,200 revs. per min., running for 25 secs.; when finished the complete model turned the scale at $\frac{3}{4}$ lb.; best flight 50 yards off the ground.

"With regard to the second one, the span here was slightly more than the first model, being 3 ft. 6 ins., chord 8 ins., overall length 2 ft. 11 ins., planes built up; double surface; the power in this case was rather more, being four skeins of $\frac{1}{4}$-in. strip, five strands per skein, driving on to a five-geared motor. By the way, in both models the gears were all one pitch, neither was geared up nor geared down, driving direct on to a 12-in. screw, giving 2,000 revs. per min.; complete model weighing $1\frac{3}{4}$ lbs. The results here were not so good, only getting 20 yds. r.o.g. out of her; but I think the tractor screw revolved much too fast, for when the model has flown a few yards I always notice it overbanks to the left. I have tried altering the rudder to counteract the torque, and find this makes very little difference, so I intend fitting a 12 in. four-blade screw, which will run out about 1,200 revs.; this, I think, will stop the tendency to overbank. At present the model is under repair, having a smashed chassis, broken wing-tip and damaged *fuselage*. This occurred on Sunday, June 13th, another unlucky number, but I had the satisfaction of seeing the model rise from the ground and fly a matter of ten yards, which is a little encouragement.

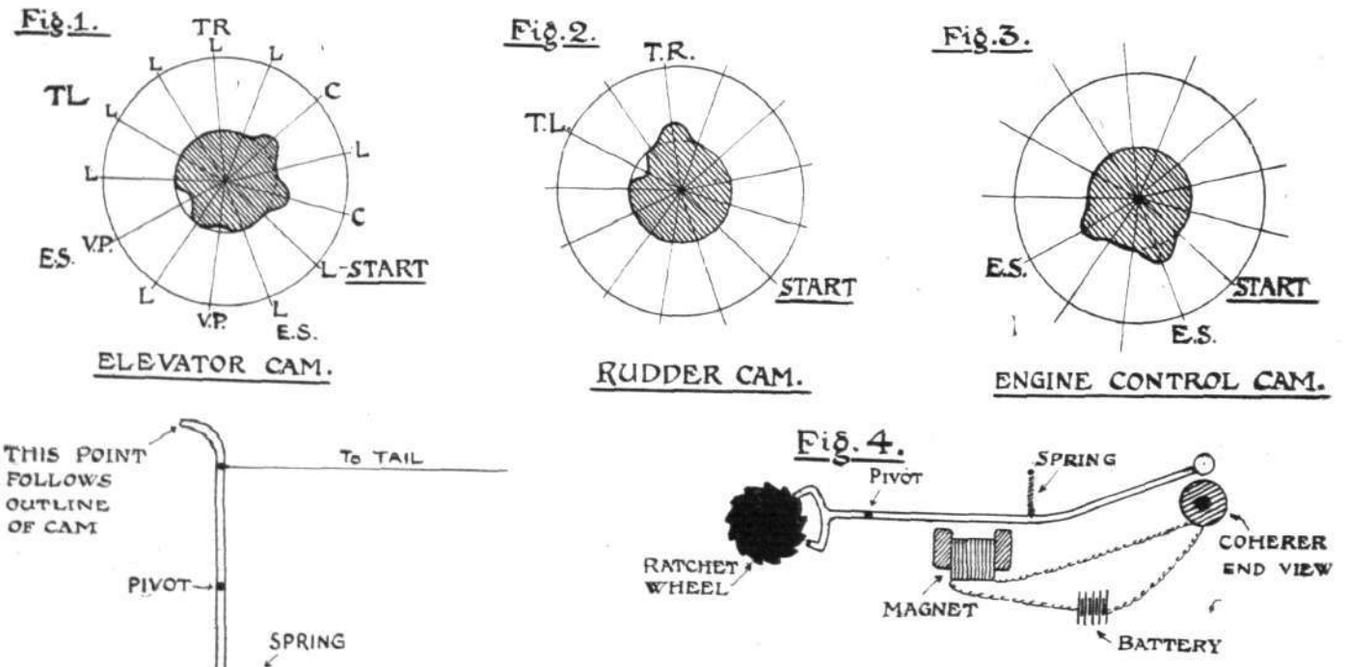
"I find the most difficult task is to get the centre of gravity well forward. This was managed by carefully weighing the parts and making the tail as light as possible, for, as you will see by the accompanying photo., the planes are well forward, thus giving a much better appearance.

"As I am contemplating constructing a power-driven model of the same type, fitted with floats, I should like to know where I can purchase a reliable engine, either a flash steam plant or a petrol engine of about $\frac{1}{2}$ h.p.; the span will be 7 ft., chord 16 ins., overall length 5 ft. 3 ins.

"As I am the secretary for the International Club of Aeronautics for Leeds, I should like to hear from anyone interested in models in this town with a view of forming a flying club. Write to or call at No. 4, Bk. Greenmount Terrace, Beeston Hill, Leeds."

A Wireless-Controlled Model Aeroplane. By J. C. BALDEN.

"Regarding your article in a recent issue of FLIGHT on a 'Wireless-Controlled Dirigible,' an identical article of which appeared in the *Aero* on September 21st, 1910, part of which mechanism is employed in my solution of a Wireless-Controlled Model Aeroplane.



A wireless-controlled model aeroplane by Jas. C. Balden.

"The problem I set out to solve was, to make an aeroplane answer to three things, namely, the elevator, rudder, and engine control; wing warping could be included, but at the present stage would only complicate matters. The model is controlled by the use of cams, which actuate the elevator, rudder, and engine control,

they being mounted on a shaft (in the positions as shown in Figs. 1, 2, and 3) with $\frac{8}{4}$-in. clearance. The shaft is made to rotate by means of twisted rubber as a spring, but is prevented from doing so until desired by means of a ratchet wheel and a pawl, Fig. 4. As will be seen from the drawing, this part of the apparatus is exactly similar to that in a recent copy of FLIGHT (Fig. 3), and thus I think needs no further description.

"The controls, of course, can only be actuated in succession, which I propose to do as follows in 13 movements :—1. Start along ground; 2. Climb; 3. Fly level; 4. Climb; 5. Fly level; 6. Turn right; 7. Fly level; 8. Turn left; 9. Fly level; 10. *Vol plané* with engine stopped; 11. Fly level with engine going; 12. Flight *vol plané* with engine going; 13. Level, land, engine stop.

"Of course other cams could be fitted for any other series of evolutions desired. Any desired movement of the aeroplane could be got by using the tapping key quickly. Suppose it was climbing movement 4, and a *vol plané* was required, next movement 10, six quick taps of the key would be all that would be necessary, the intermediate movements being passed over so quickly that they would not have time to take much effect. I would be glad to have this solution of the 'wireless controlled model' criticised as to any suggestions that might improve it."

We need scarcely say that when publishing the former article on this subject we were unaware of its previous appearance in another paper. We shall be very pleased to receive criticisms, suggestions, or any useful comments on either or both of the two articles. There is no doubt that this is *the* branch of future model aeroplaning.

An Original Model. By E. N. BRAY.

"Some little time ago I wrote you that I was making a machine with the rubber across the wings. I now enclose photos.

The particulars are as follows :—Span of upper plane, 48 ins.; chord of upper plane, 6 ins. at centre, $3\frac{1}{4}$ ins. at tip; span of lower plane, 41 ins.; chord of lower plane, same as upper plane; gap, 3 ins.; surface of upper plane, 1·55 sq. ft.; surface of lower plane, 1·32 sq. ft.; surface of tail, 1·26 sq. ft.; weight without rubber, 12 ozs.; rubber, 12 strands of $\frac{1}{12}$-in. square, weight $2\frac{1}{4}$ ozs., across wings; four strands along *fuselage*; gear ratio, 2–1, *i.e.*, the propellers run two revolutions for each one of the cross rubber; propellers, 11 ins. diameter.

"The greatest distance I have flown it is about 120 yds., and duration $12\frac{1}{2}$ secs. It can rise off the ground, and this extraordinarily steadily. It is made of hollow spars. I had the bevel wheels specially cut, and they are of steel, nickel-plated. In appearance it is almost exactly like a real machine, and the hum of the bevels is like a tiny Gnome engine. The chief difficulty is to protect the propellers, and prevent the spindle getting bent; when it lands on rough ground, it inevitably turns on to its nose, and the wheels are too small for anything but show turf. I think it is novel in many ways, and may prove of interest to your readers.

"I have a suggestion to make, which might lead to an advance in two directions :—

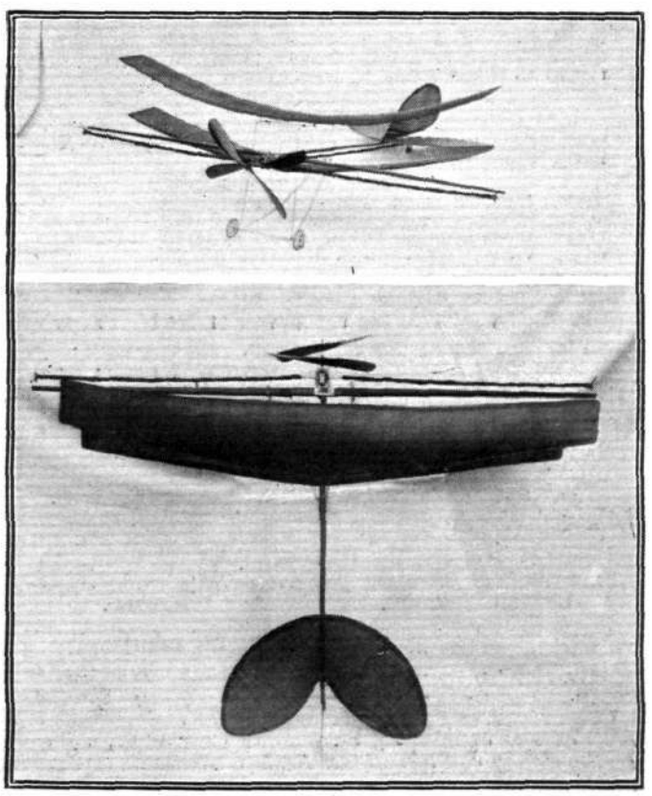
"1. A compressed air-container made of woven silk, with a thin rubber lining. I have made one 24 ins. long, 2 ins. diameter when blown up, weighing $1\frac{1}{2}$ ozs. without air. The difficulty was that it was hand-knitted (like a stocking), and there were one or two loose places, and the rubber tended to force through like a punctured tyre; though I have pumped 110 strokes without bursting.

"2. My other suggestion is: A steam plant, using alcohol instead of water and the exhaust as fuel for the burner. The gain would be two-fold : (*a*) No extra fuel except for starting; (*b*) lower evaporating temperature.

"I have made no experiments, except that I put some methylated spirit in a compressed air container, boiled it on the gas and lit the exhaust. There will doubtless be endless difficulties, but it would make a very light and interesting plant. I will let you know how I get on with the silk-rubber container."

Our correspondent's suggestion with regard to the use of methylated spirits, both for the boiler and heating apparatus, is not by any means new. A description of such a machine (a helicopter) which actually flew is given in one of the very earliest numbers of FLIGHT. A model engine on that principle was also exhibited at one of the Royal Aero Club exhibitions at Olympia, and the same principle has also been advocated by the writer. It does undoubtedly possess some advantages, but is certainly not equal to a good flash-boiler plant.

With regard to the rubber-bodied, silk-covered container, *re* which our correspondent has sent us one of the rubber tubes, the idea is certainly ingenious for certain very light models, but we do not consider it, on the whole, in any way (except that of perfect safety in case of burstage) as good as metal foil, wire wound containers, previously advocated in these columns.



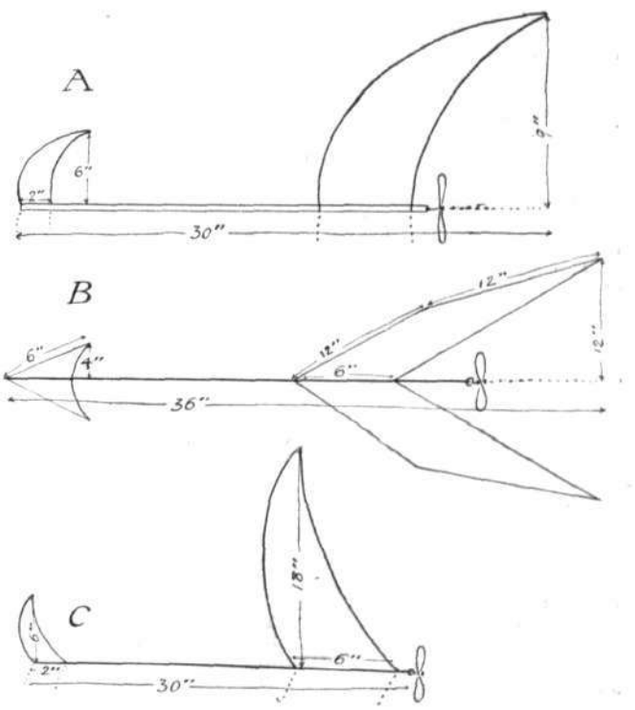
Mr. E. N. Bray's model as seen from the front and from above.

Some Experiments with Models of Varying Types.

By PHEROZE E. J. MINVALLA.

Having for the last three years studied the fascinating science of flight, I should like to have the views of some of your readers on various problems that have hindered me.

I read with great interest "Model Aeroplanes and How to Make Them," and constructed various models described, and obtained a fairly successful number of flights. But it struck me that although the author used a cambered surface, yet almost all were rectangular.



Mr. P. E. J. Minvalla's models.

It occurred to me that perhaps a model (monoplane) with wings of a different shape, such as U-shaped, would give as much surface

with less resistance. So I constructed my first model of my own design, with that view in mind. The finished model weighed 3½ ozs., was built of spruce and bamboo slips, and had six strands of $\frac{1}{16}$ in. rubber (see Fig. A). The planes were not adjusted to any camber, but were as tight as a drum.

This model was particularly stable, but it rose to very great heights (however low I depressed the elevator) and then glided down until it was about six feet from the ground and suddenly dipped down perpendicularly.

Every time I tried it the same performance was repeated. Wherever I tried it, it was always the same.

The only reason I can think feasible is, that in ascending as rapidly as it did, the backward force of the air caused the wings to sag, so that when it started its glide the momentum it had received on its upward journey enabled it to maintain a level keel, and when this momentum was expended its chief supporting surface being slack did not afford sufficient resistance to prevent its dipping. This is the only reason I can conjecture. Can any of your readers suggest any better one? If so, I should be very pleased indeed to know of it, as I have been considerably worried as to what could be a possible explanation.

With the same object in view, see Fig. B, namely, to increase the surface with a minimum of head-resistance, I built another model of somewhat strange aspect; nevertheless it was flying very steadily until it collided with a tree and was subsequently broken up by an angry dog.

I have not yet built another of the same design, but I intend doing so, and I shall be pleased to inform you how it flies.

The original one was built of spruce and split bamboo. However, I determined to build a model on the opposite methods, *i.e.*, with a large span and little chord; see Fig. C.

This model I built of aluminium and piano wire, and the propeller of mica blades bolted on an aluminium tube. The wings were arched like those of a gull, but they had no camber. The angle of the front plane was much more pronounced than that of the main planes.

This model was extremely sensitive to the elevator, but nothing would make it bank either to the right or to the left! What was the cause of this peculiarity I cannot conjecture.

AFFILIATED MODEL CLUBS DIARY AND REPORTS.

Club reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Sheffield Ae.C. (41, CONISTON ROAD, ABBEYDALE, SHEFFIELD).

THOSE residing in Sheffield, interested in Aeronautics, wishing to become members of the club should communicate with the Secretary at the above address.

South-Western Aero Club (373, BRIXTON ROAD, S.W.).

JULY 3rd, at 6 p.m. sharp, a paper will be read by the secretary on "Tractors, and Six Months' Experience with them."

Monthly Report.—There has not been very much flying last month, members being confined chiefly to indoor work. What there was, however, was of an excellent quality. The sensation of the month was Mr. Howse's twin pusher hydro-monoplane, but owing to the fact that the pond from which it was flown is entirely surrounded by trees the flights obtained were not of very great duration. Towards the end of the month Mr. Reid's tractor reappeared, with a flexible rear-edged main plane. It seems to have been much improved thereby. Average durations of about 35–38 secs. were obtained, the biggest being 40 secs. Models under construction are tractor monoplane by Mr. Howse, and a tractor biplane by Mr. Reid.

Stony Stratford and District Kite and Model Ae.C. (OLD STRATFORD).

JULY 7th, Members' meeting; subject later. July 17th, Twin h.l. competition.

Monthly Report.—June 2nd, members' meeting. Subject: Aids to Model Building. The following record sheet was passed in the Single Propeller Distance Class, namely, 401 yards by Mr. O. Hamilton, Jun. Owing to smash up in tuning up flights and trials, the Tractor event was cancelled. Some very good flying has been witnessed during the month, Mr. Mennell improving the twin screw h.l. record to 90⅗ secs. on the 19th with a 3 ft. 6 ins. model of 6¼ ozs. On the 19th Mr. Mennell made an attempt to obtain 190 secs., and succeeded in putting up a flight of 181⅕ secs. and 899 yards, the flight being the best obtained at present by any member of the club. Mr. Brown has also improved his previous best of 63 secs. by obtaining a flight of 73 secs., whilst other members have reached the 60 mark. Saturday, the 26th, we had the pleasure of a visit from Mr. Chown, of the Wimbledon Club, who brought over his 6 ft. tractor c.a. motor model, and two good flights were witnessed, one of 40 to 50 secs. duration, but unfortunately the proceedings closed after the third flight with a broken crankshaft. The motor used by Mr. Chown was one of Mr. Hayden's design. Other members were out flying h.l. models. Mr. Mennell obtained 50 secs. with a r.o.g. h.l., whilst the Secretary obtained about 40 secs. with a single h.l.

UNAFFILIATED CLUBS.

Finsbury Park and District (66, ELFORT ROAD, HIGHBURY, N.).

Monthly Report.—During the past month work has progressed steadily and members have been out on all flying days, and many lengthy flights have been made, although operations have been restricted owing to circumstances of an exceptional nature connected with the war. Prominent this month have been Messrs. A. Richard (Blériot), F. E. Raynor (Morane) and B. H. Barnard (Beachey), all r.o.g. tractors, which have been putting up durations of 40-50 secs. Messrs. Hex and W. Hardinge have also put in good work with tractors, the former's machine being a light standard mono. and the latter a heavier built Morane, both machines showing great promise. During the month Mr. W. Thompson has been tuning up a tractor waterplane with fairly good results, although the machine, being undersurfaced, did not rise as easily as could be wished. Mr. B. H. Barnard's 4 ft. span tractor biplane, which has been on the stocks some time, made its appearance last Saturday and proved a fine and steady flier on its first attempt, the interest taken in it by various spectators being almost more than pleasant.

Liverpool Aero Research Club (62, CEDAR GROVE, LIVERPOOL).

Monthly Report.—Most members have been busy in the outdoor section, the chief performances from the point of duration flying being the Bennett-Lear hollow-spar twin 4 ft. r.o.g. canard. June 5th, besides some very good flights by the T. W. Bennett r.o.g. biplane, a very promising start was accomplished by the Lear-Bennett covered *fuselage* r.o.g. tractor monoplane. June 12th saw the best flying for a considerable period, a really good show being executed with the Bennett and Lear biplanes, in addition to the fine flights by the h.l. biplane of G. H. Kilshaw, and a very promising demonstration by the V. Barrow r.o.g. Deperdussin single tractor mono. The 1st mid-week flying of the season took place June 17th, but did not prove very exciting, although fairly good flights were accomplished by the T. W. Bennett dihedral biplane and the G. H. Kilshaw upturned biplane, both being twin-screw canards. June 19th, besides biplane flying by B. Lear, times over minute flights with good altitudes were being got from the hollow-spar Bennett-Lear canard mono., which, though extremely slow, as regards good stability compares favourably with her quicker types—the racers, the dihedral angle proving fully sufficient for this purpose. A fair show was made on the Kilshaw-Bennett biplane combination—a rise-off-ground canard, which showed very good stability.

Scottish Ae.S. Model Ae.C. (5, DOUNE QUADRANT, GLASGOW).

MEMBERS please note. No flying meetings will be held during July or August owing to holidays.

Monthly Report.—On June 5th Mr. G. Pinney visited Paisley Racecourse to test his new tractor c.a. model. Unfortunately one of the wing spars broke, owing to the model performing a cart-wheel on the ground, which put an end to further experiments. Aluminium tubing ⅜ in. dia. is now being fitted to the wings, which are double surfaced. On June 12th, at Maxwell Park, Messrs. Mills, Donaldson and Pinney testing waterplanes under splendid weather conditions. On June 19th, at Paisley Racecourse, Messrs. Pinney, Harrington and Balden were flying models. The committee regret to have received the resignation of Mr. Wm. G. Langlands, hon. joint sec., who has left to take up an appointment in London. "Certificates of Record" will be issued for all Scottish Records made on and after Sept. 1st, 1915, in accordance with the Standard Rules and Regulations.

NEW COMPANY REGISTERED.

Rubel Bronze (1915), Ltd., 32, Victoria Street, S.W.—Capital £100,000, in £1 shares. Manufacturers of and dealers in alloys, bronze ingots, castings, tubes, sections, &c., metallic substances and products manufactured therefrom, metal workers, metallurgists, marine and general engineers, ordnance manufacturers, makers of torpedo tubes, motor cars, airships, aeroplanes, &c. First directors are to be appointed by the signatories.

Aeronautical Patents Published.

Applied for in 1913.

Published July 1st, 1915.

18,515. G. KOLB. Flying machine with gyroscopic device.
19,068. P. BISCHOFF AND E. BISCHOFF. Dirigible airships.
19,954. H. H. SALOMONS. Hydro-aeroplanes.

Applied for in 1914.

Published June 24th, 1915.

13,262. SOC. ANON. NIEUPORT. Hulls and floats for hydro-aeroplanes.
13,263. SOC. ANON. NIEUPORT. Hulls or floats.

Published July 1st, 1915.

6,266. J. W. WULFFING. Dirigible balloons.
6,602. H. WINDHOFF. Cooling arrangement for aeroplane motors.
14,743. JACOB LOHNER AND CO. Propeller drive for aeroplanes, &c.
15,384. VICKERS, LTD., AND H. B. PRATT. Airships.

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FLIGHT.

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